BAY AREA RAPID TRANSIT'S POWER FOR PROGRESS . . . p. 24

MARCH 6, 1967

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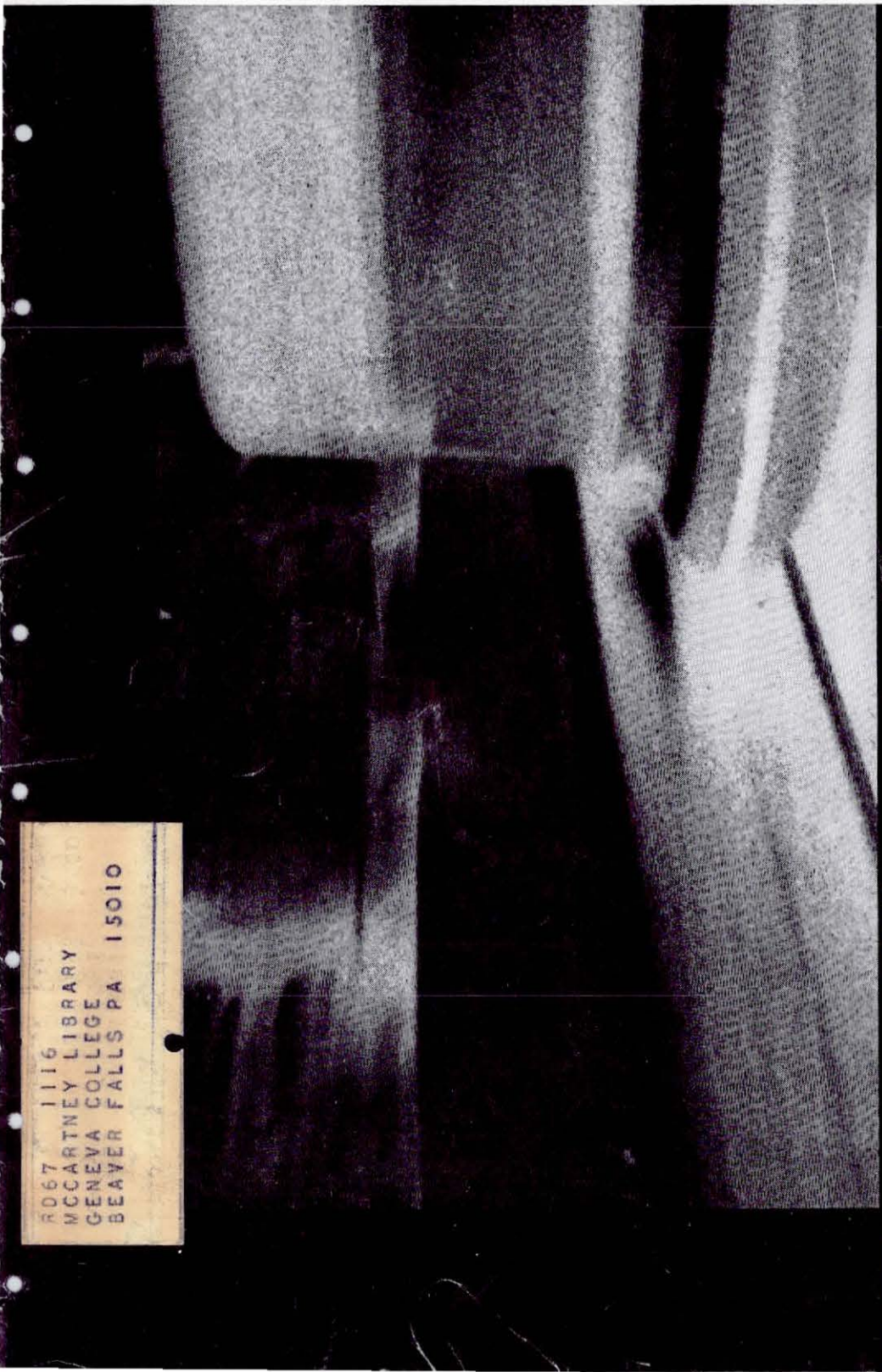
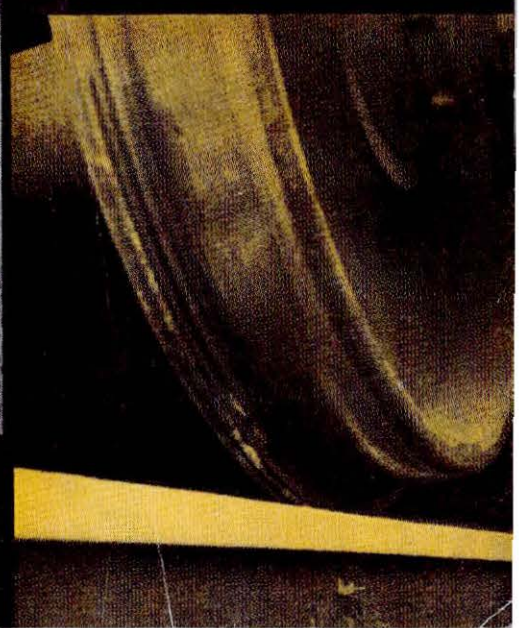


WHY THIS WHEEL WANTS TO CLIMB

Researchers believe they're on the right track to the causes

p. 19



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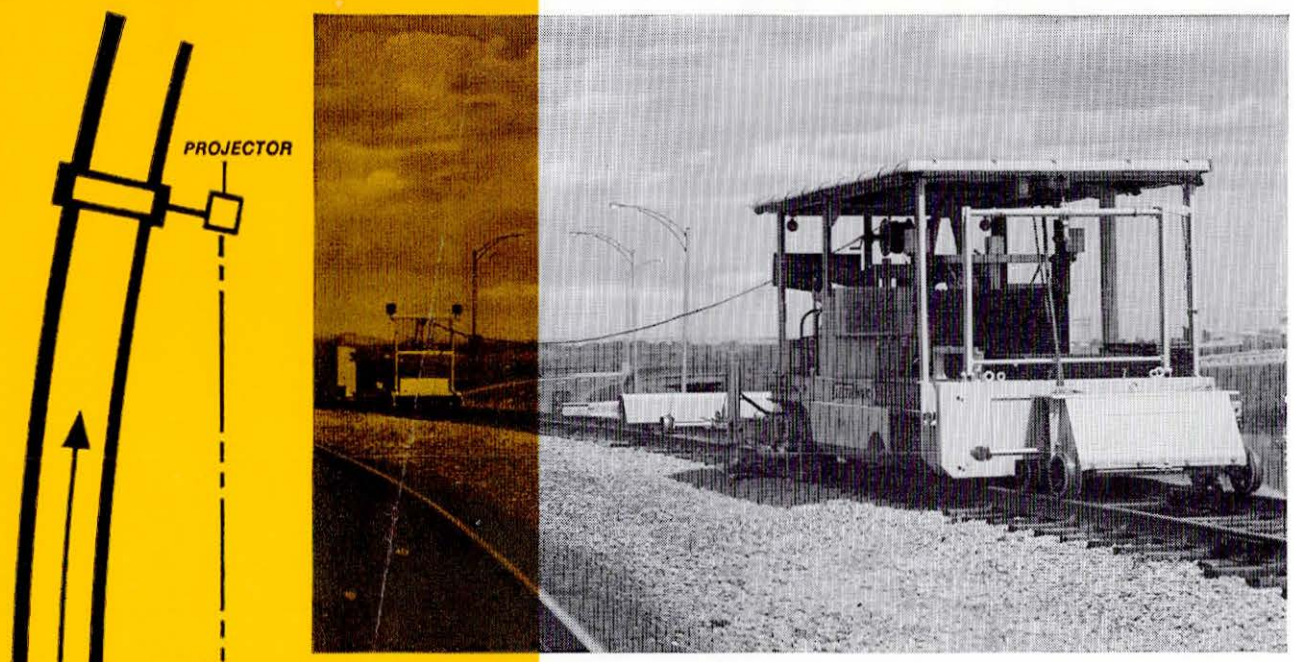
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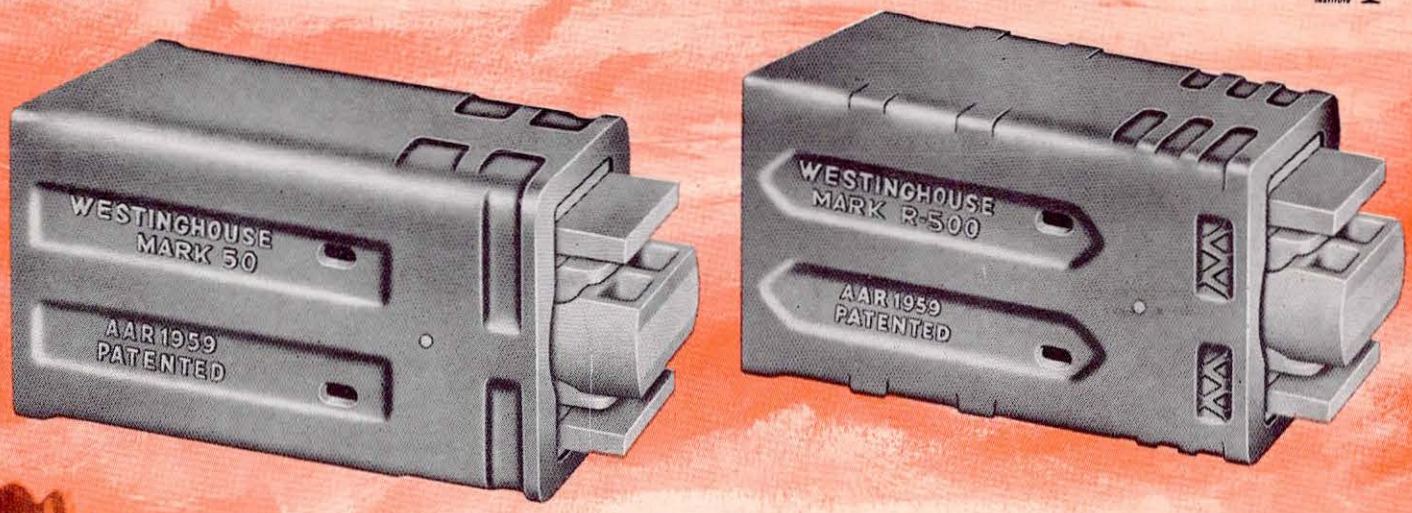

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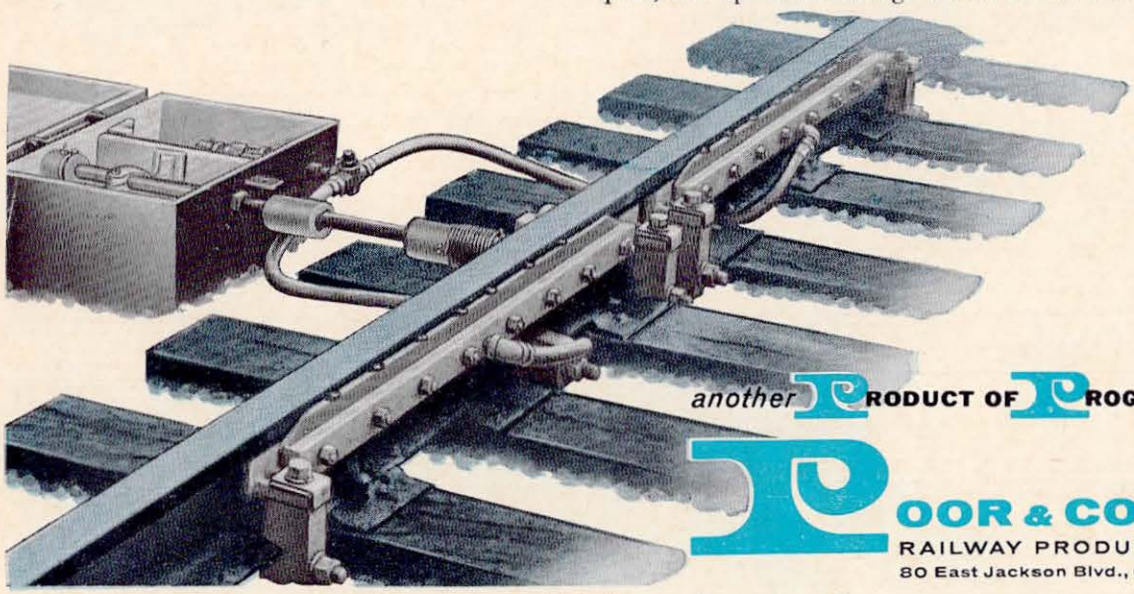

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RAILWAY AGE March 6, 1967 • Vol. 162, No. 9

THIS WEEK

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The AAR's research staff has been probing deeply into the question of wheel climbing. Here are some findings.

24 BART begets a building boom

Some expensive new building developments are rising along the right of way of San Francisco's new transit system.

31 Mexico's capital maps out transit

Money is now available for Mexico City to proceed with plans for a subway-surface-elevated transit network bisecting downtown.

35 Loading costs drop as sides open wide

The first of 50 new Ramco all-door box cars, designed for fast loading, will be coming off the production line this month.

36 Top court rules on MoPac vote plan

The Supreme Court has given Alleghany Corp. veto power over MoPac plans to merge with Texas & Pacific.

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Is it time, as Dr. Robert Nelson suggests, that railway suppliers began to go after government R&D money?

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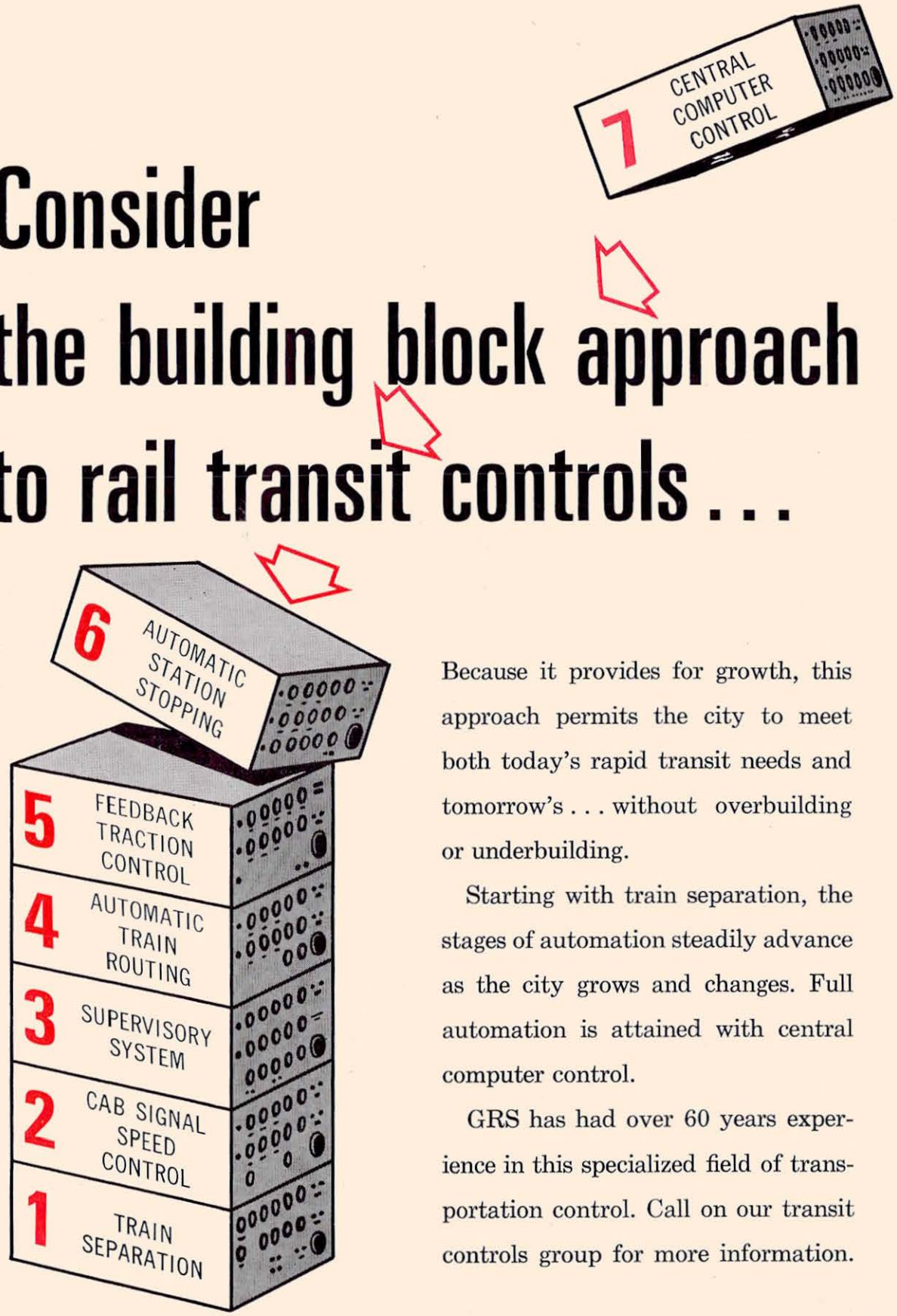
Consider the building block approach to rail transit controls . . .



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SHORT AND SIGNIFICANT

BART opens bids on ATC system

Westinghouse Electric is the apparent low bidder on an automatic train control and communications system for the Bay Area Rapid Transit District. Each of five manufacturers submitted three alternate bids—Alternate No. 1 being contingent on the present BART schedule, calling for the system to go operational in August 1969; and Alternates 2 and 3 providing for delays of two and four months, respectively. Westinghouse Electric's bid on Alternate 1 was $26,199,959; on Alternate 2, $26,143,959; and Alternate 3, $26,078,959. Other bidders (figures apply only to Alternate 1): WABCO, $29,830,001; General Railway Signal, $29,980,560; Philco-Ford, $30,944,743; and General Electric, $34,965,000. Bids are now being evaluated; the contract will be awarded when BART directors meet late this month.

●

Priority given to airport links

Efforts to improve airport connections—both within terminal areas and to city centers—are being stepped up. Tampa awarded a contract for intraterminal service (RA, Feb. 27, p.11); New York, Detroit, Los Angeles, Newark, among others, are making studies; Cleveland is hard at work building an airport transit connection. Whatever the system concept adopted, all will want to avoid Tokyo's experience, where the 8.2-mile monorail to the airport was something less than a success. A national business weekly ran an interview with the Japanese line's managing director, who acknowledged these drawbacks: High fare; poor connections and inadequate baggage handling at both ends; a new expressway paralleling the right of way.

●

Pan American Congress is on again—maybe

The on-again, off-again XII Pan-American Railway Congress now appears to be on again. Present indications are that it will be held in Buenos Aires in November. A decision on the Buenos Aires meeting is expected in about two weeks. The decision to hold the Congress in Argentina requires a government decree which must be signed by the President and four cabinet ministers—and all signatories must hold office simultaneously. Two earlier attempts to get such a decree through the red-tape mill have faltered—the first when the new military junta seized power last June, the second when the cabinet was reshuffled in December. The President is known to favor the Congress, and if the government—and the cabinet—hold together for another few weeks, the decree will go through.

●

C&NW suburban service sets records—again

For the fourth consecutive year, Chicago & North Western suburban-service revenues and net income have hit record high levels. Revenues in 1966 were more than $16.6 million, an increase of 6.4% from '65 levels; and net income climbed to $2,043,000, an increase of 47%. Contributing mightily to the showing was the ever-increasing acceptance of the service by Chicago area commuters. Rider volume was up 6.4%, up from 5% in both 1965 and 1964. Other vital statistics from 1966: The average commuter traveled 21.3 miles, up slightly from the average-trip figure posted in '65; North Western operated 57,425 revenue trains in '66, and the average passenger load was 396, up 25 from year-earlier levels. And of prime interest to the commuter population: For the fifth straight year, there'll be no fare increase; but there will be more new equipment, 16 double-deck coaches on order for delivery next autumn.

MONDAY MORNING REPORT

High speed: No foreign monopoly

U.S. railroaders, accustomed to hearing their technical accomplishments compared unfavorably with those of contemporaries overseas, should take heart from the activities along a 21-mile stretch of track near Trenton, N.J.

Test trains operating over this line are now frequently reaching top speeds of 145 to 152 mph. The site is the specially prepared section of the Pennsylvania electrified main line which is being used for Northeast Corridor research by the U.S. Government's Office of High Speed Ground Transportation (OHSGT).

Close attention to details

That speeds rivaling those achieved in Japan, France and Germany are becoming almost routine in New Jersey is a tribute to the basic soundness of American railway construction. There is no real secret to 150-mph trains, according to C. T. Law, OHSGT engineer. Rather than anything radical, he explains, what is needed is careful attention to details which are not important at conventional speeds but become extremely so when very high velocities are achieved. Close tolerances on cross level, gauge and other track details have produced a running surface over which the experimental high-speed trains (and conventional ones, too) can operate with remarkable comfort. Track structure is quite standard without even movable nose frogs at switches, such as are used on Japan's New Tokaido Line.

The potential is there

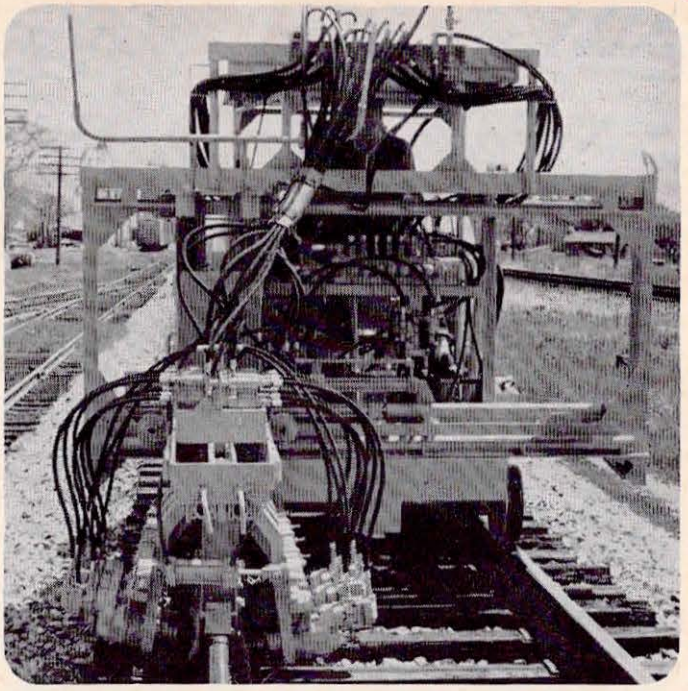
The four electric m-u test cars, virtual duplicates of the lightweight 85-foot commuter coaches used in the Philadelphia area, have special high-speed gearing and, now, semi-streamlined ends. The streamlining, much like that to be used on the 50 revenue-service m-u coaches and parlors which Budd will deliver late this year, has been shown to add at least 5 mph to the top speed of the test vehicles. While each test car has four 150-hp motors, the revenue cars will each have four 300-hp motors.

More than 100 persons attending a recent seminar of the Committee on Passenger Traffic of the Railway Progress Institute learned first hand of the potential for speed in the conventional American railway plant when, aboard three of the laboratory cars, they got a ride that topped 140 mph.

Has too much been promised?

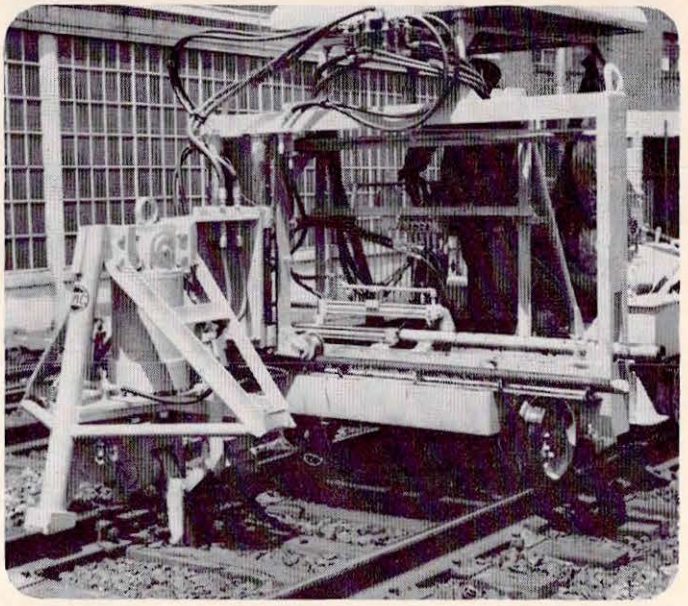
When the demonstration service starts late this year, there may be a new selling job to do. The public, remembering frequent discussions of 150-mph trains in the popular press, could be disillusioned to find that New York—Washington schedules initially anticipate top speeds of 110 mph with even more conservative timing in territories of excessive curvature and frequent grade crossings. While there are no grade crossings north of Wilmington, Del., there are more than 20 between there and Washington; all are to be equipped with automatic gates. Only after considerable operation at 110 mph would PRR consider raising the limit to 120 or 125 mph. More important in fast schedules will be the trains' ability to accelerate rapidly following speed restrictions and the short station stops which will be possible with the high-level platforms that are now being built at Washington, Baltimore and Wilmington—stations which previously did not have them.

3-machine joint package



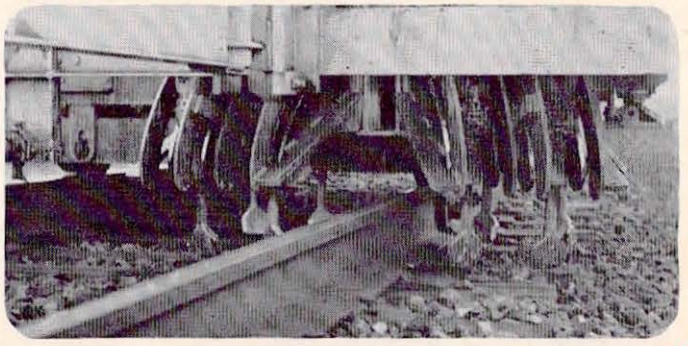
Tighten or Loosen Joints

■ *RMC BoltMaster* tightens or loosens all bolts at a joint, using either 6- or 4-chuck head. The operating head can be interchanged with a Joint Straightener attachment, broadening the machine's utility.



Straighten Rails

■ *RMC Joint Straightener* straightens rails and restores camber to joint bars by vertical cold bending. Also, an on-off track Combination BoltMaster/Joint Straightener is available.



Spot Tamp with 8 Tools

■ *RMC-McWilliams 8-Tool Spot Tamper* features a head which traverses from rail to rail—using same tamping pattern as the 16-tool RMC McWilliams Production Tamper. The eight-tool Spot Tamper is shown with a Joint Surfacing Device.

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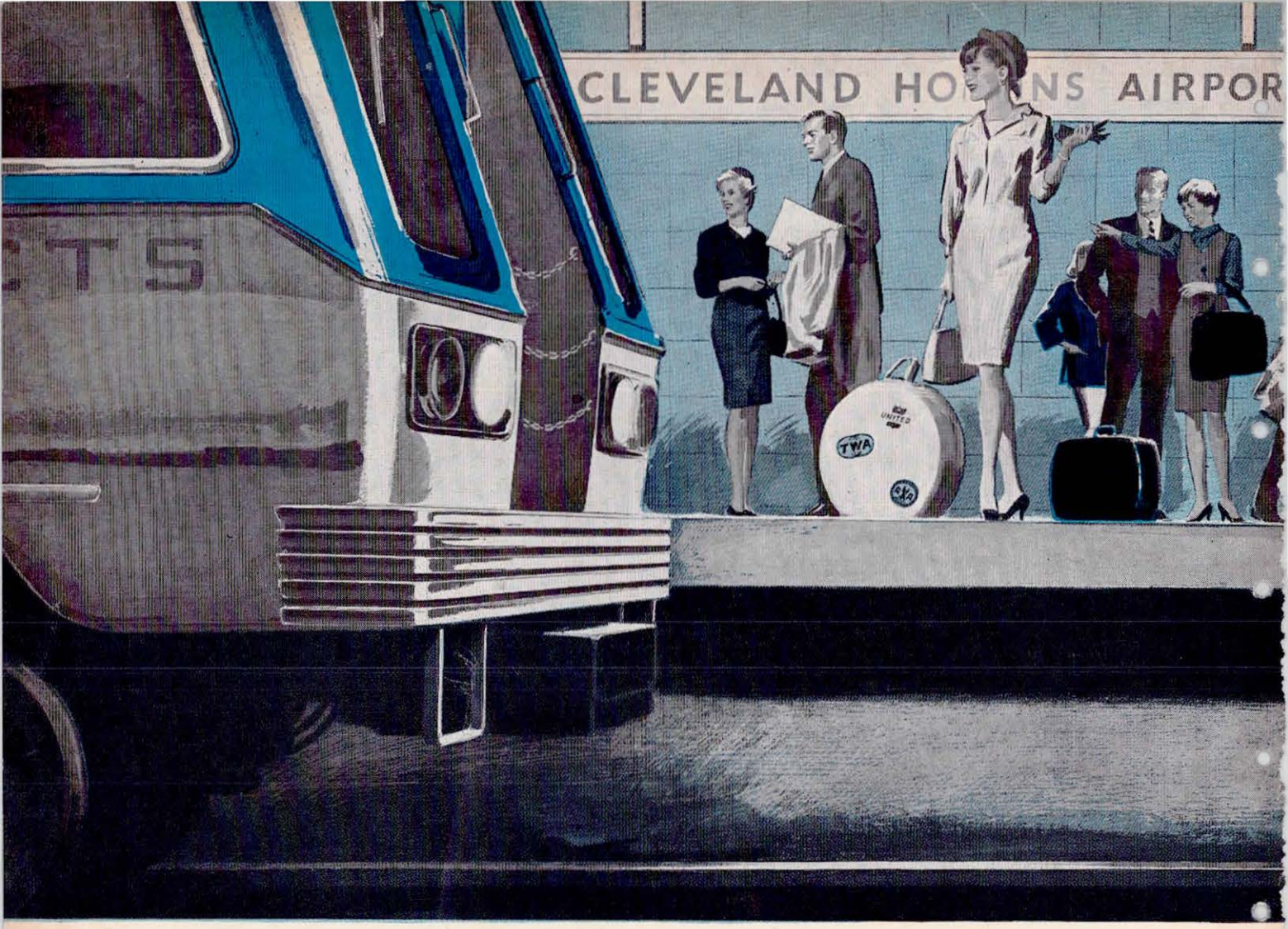

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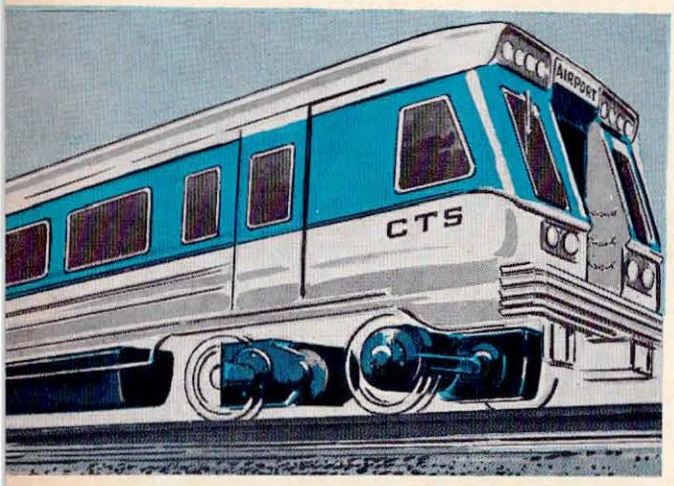

General Electric propulsion systems will speed new CTS to the airport.

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WEEK AT A GLANCE

Boston & Maine to ICC: 'Let us in—or out'

Boston & Maine last week asked the ICC either to order B&M's inclusion in the present Norfolk & Western system on "fair and equitable" terms—or, alternatively, to deny B&M's petition outright, thus freeing it to move at once for inclusion in another system—either the Penn-Central or the proposed N&W-Chesapeake & Ohio.

B&M's request came in the form of exceptions to the report and recommended order of Commissioner Charles Webb. The Commissioner proposed, noted B&M, that N&W be given a unilateral option to acquire B&M at the price proposed by N&W and C&O in connection with their Dereco proposal.

B&M argued that Webb erred in departing from the record to seize upon an offer made in connection with a different proceeding (N&W-C&O) on which hearings have not been held. The New England carrier argued that if the B&M is given "proper credit" for what it could contribute to N&W, the ICC could properly direction its inclusion at the exchange ratio proposed in the B&M petition—.41849 shares of N&W common for each share of B&M common.

Burlington starts rail-air container service

A Denver-to-Chicago-to-London shipment March 5 inaugurated a test of rail-air service being conducted by Chicago, Burlington & Quincy, Pan American World Airways and the Trailmobile Division of Pullman-Standard.

Loaded at Denver March 5 by the Wilkerson Corp. and the Robbins Incubator Co., the containers moved by TOFC on flat-bed trailers to Chicago, where they were transferred to a jet at O'Hare International Airport. The 322-cu-ft aluminum containers are slated for delivery in London March 8.

A Burlington spokesman said the service was aimed at the increasing tonnages moving internationally, especially when the Boeing 747 goes into operation in the 1970's. Such rail-air service is slated to serve areas that cannot be served by the giant aircraft.

"A transportation tie-in such as this," said the spokesman, "would utilize facilities of rail systems to move shipments direct to air freighters for overseas distribution. Use of containers would further cut time and costs by eliminating the handling of individual shipments at railheads and airports." Each container has a weight capability up to 7,000 pounds.

New-car orders take a dive in January

It was bad-news-week along the railway market front—and one of the most sobering pieces of news came in a joint release March 2 from the AAR and the American Railway Car Institute. Railroads and private car lines ordered only 2,055 new cars in January, AAR and ARCI reported—one fourth of the 8,334 new cars ordered in January 1966. The decline was blamed on suspension of the investment tax credit and "the resulting financial inducement to defer such orders until 1968." The backlog of cars on order but undelivered also started to dwindle. On Feb. 1 the backlog was 51,450 cars—down from 56,618 on Jan. 1 (though still higher than the 45,754 a year ago).

While new-car orders fell sharply in January, the railroads announced they would rebuild 2,309 cars, principally in their own shops. In January of 1966 only 150 cars were ordered for rebuilding.

Deliveries of new cars totaled 7,217 in January, compared with 8,043 the previous month and 7,724 in January 1966. Of this number, 5,929 were supplied by commercial carbuilders and 1,288 by railroad shops. Deliveries of rebuilt cars totaled 1,014 in January. The total of 8,231 new and rebuilt cars delivered in January compared with 9,503 in the preceding month and 9,050 in January 1966.

SRO at Pittsburgh transit meeting

The First International Conference on Urban Transportation held in Pittsburgh last year was a spectacular success—and this year's version promises to top the previous record. Attendance at the 1966 conference was anticipated to be in the neighborhood of 1,000; in fact it drew 1,300 participants in spite of a severe snowstorm.

For this year's conference, to be held April 17-19 at the Pittsburgh Hilton, the turnout will probably be even better, according to Frederick J. Close, board chairman of Alcoa and program chairman for the event. He noted the large number of acceptances to invitations coming from fabricators and suppliers of transit equipment; consultants; representatives of business and professional organizations; and newsmen. As for press coverage, Close said, "So far we have been asked for accommodations by editors in Argentina, Brazil, Chile, France, Germany, Great Britain, Italy, Japan, Mexico, The Netherlands, Switzerland, Sweden."

Rails' share of new-auto traffic goes to 45.7%

Railroads last year hauled 4,721,000 new motor vehicles, building their share of this traffic to 45.7% of the total. Their 1965 share was 40.2%. The AAR attributes the continuing growth to the expanding fleet of auto-rack cars and to low rates made possible by volume movements on those cars. There are now 16,912 rack cars in service. When those cars were introduced in 1960, the railroads were handling only 9.7% of the new-motor-vehicle business.

GUS WELTY'S LINES ON LABOR

WELTY

EVERYBODY WHO WANTS IT is getting a piece of the action in the fast-growing rapid-transit field—but hardly anybody has come closer-in from so far-out than the Brotherhood of Railroad Trainmen. Early in May, the BRT will be holding its second national conference on public transportation at the University of Chicago. Already, 60 people have signed up—and the roster of participants is beginning to look like a "who's who" of the people-moving business. As things now stand, the conference group will include representatives of five commuter railroads, six urban-transportation organizations and five major supply companies. Another railroad and two other transit-oriented organizations will be represented, at the least, through prepared papers. City planners and university types make up most of the rest of the participant list, along with a sprinkling of general and trade press people.

WHY DOES THE BRT BOTHER with such things? Why are transit conferences deemed worthy of any attention, let alone the expenditure of time and money? To be sure, the BRT does represent trainmen on many commuter roads, and it has a sizable bus division, and it may have its ideas about representing operating employees on yet-to-be-formed transit operations. But somehow there's a feeling that the BRT interest, believe it or not, does really go beyond the commercial aspects. If this is true, then the BRT is doing what so many labor organizations talk about and so few accomplish—the broadening of purpose beyond just representation of employees.

BRT PEOPLE have tipped over backwards to avoid any hard-sell of union positions. Last time around, they may even have tipped too far—because seminar participants raised questions involving labor matters, and there wasn't anybody immediately around to give an answer. This time, more BRT people may be on hand—but to lend an informational hand, not to expound the kind of doctrine usually found in Section 6 notices.

THERE IS, CERTAINLY, NO LACK of organizations devoted to the mass-transportation cause. The BRT may just be an added starter and one that isn't much needed. Then again, mass-transportation may not be the final beneficiary of what the Trainmen are doing. In this area and in a couple of others which haven't yet come to public attention, the BRT seems to be trying to go 'way beyond what the ordinary labor union ever attempts.

SO, SOMETHING OF VALUE could come from these BRT conferences, and it could be on the stated subject, mass transportation. But it could also be on the unstated, the unspoken—in an area of need which all special-interest organizations share, and that is, of course, the broadening of knowledge and understanding.

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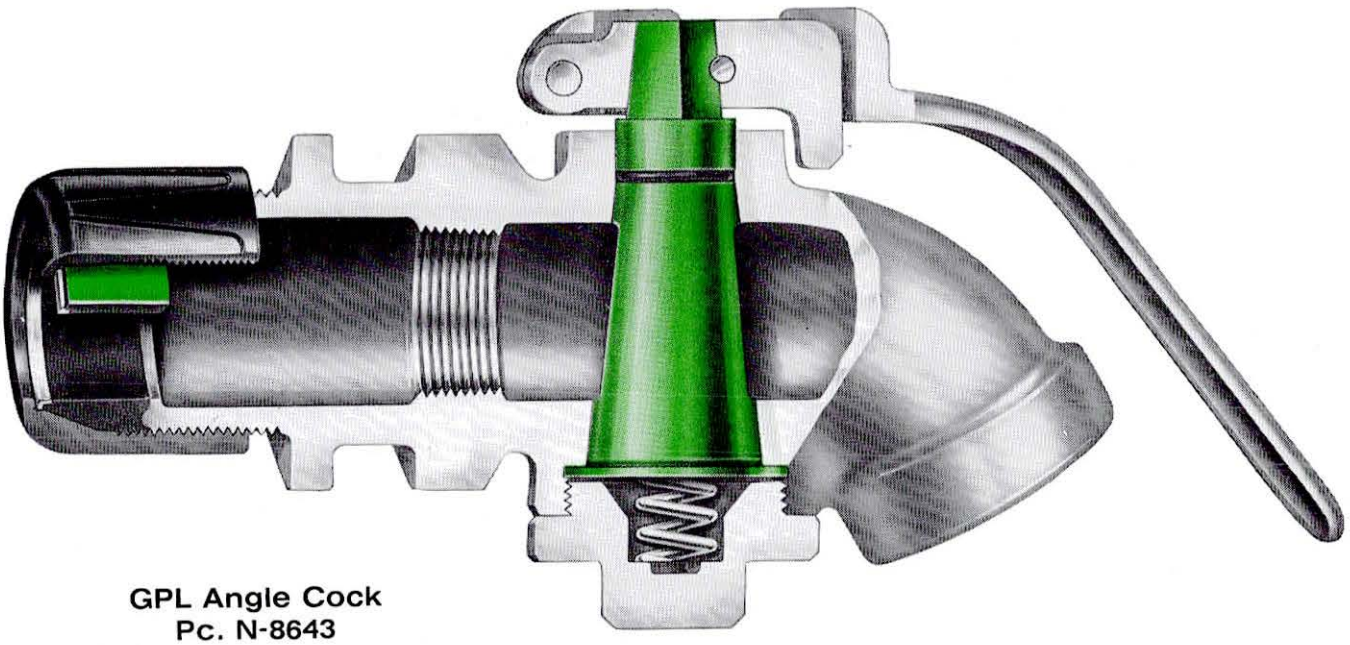

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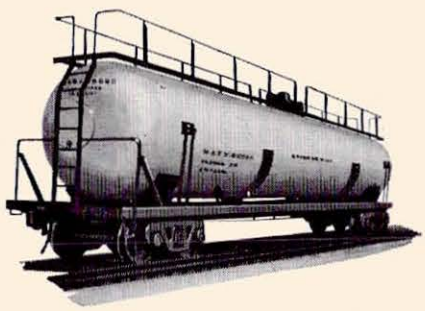

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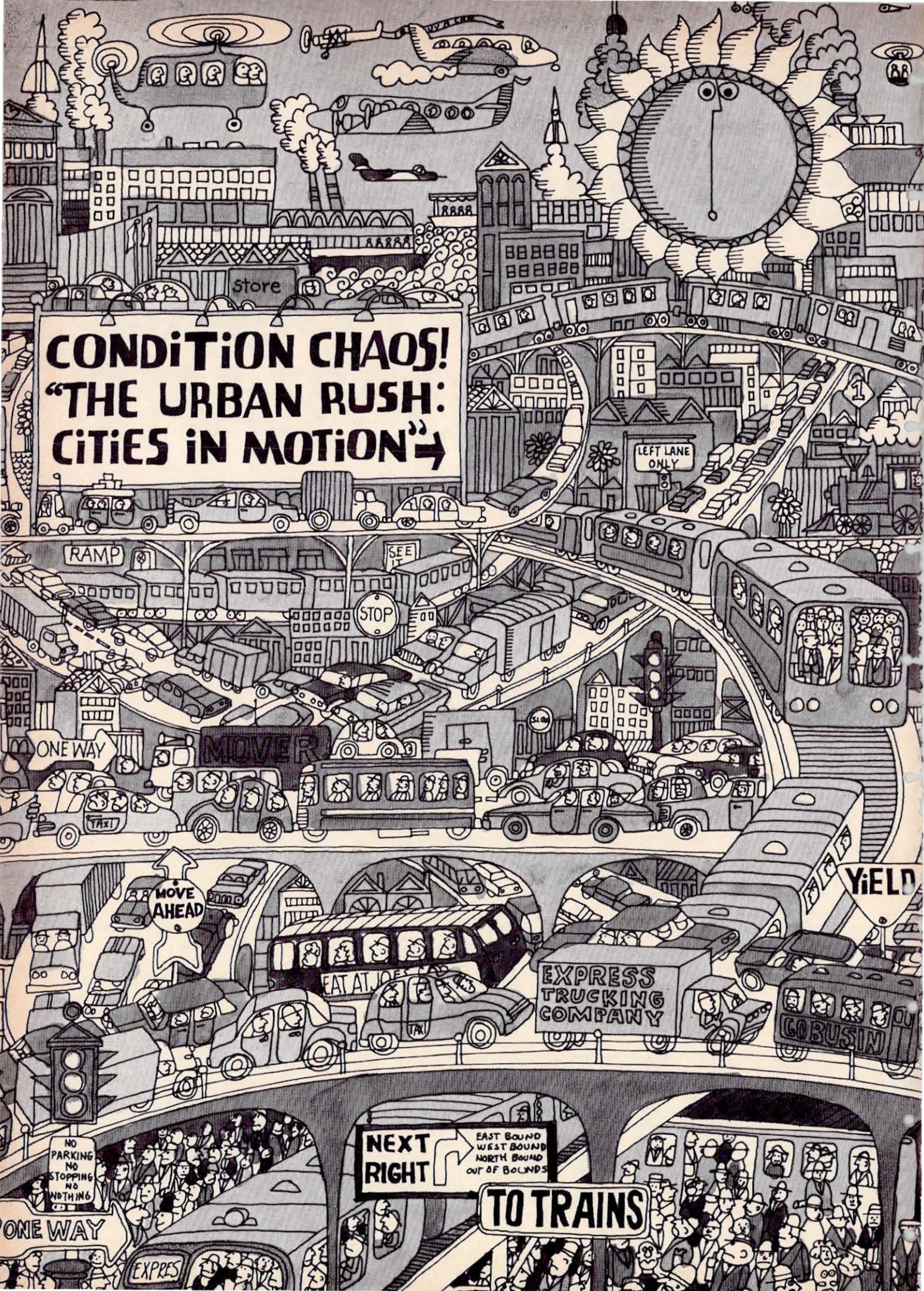
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Photo courtesy Great Northern Railway

The work trains don't wear antlers anymore.

And their crews don't sport beards and vests.

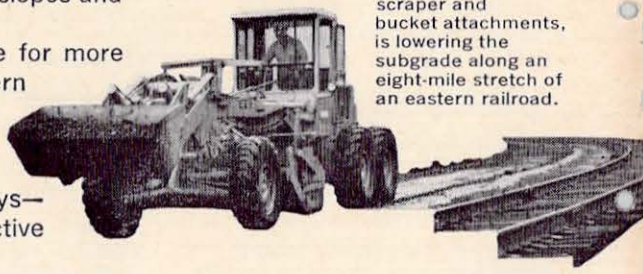
Railroading is still changing. Yesterday's methods are being replaced on modern roads with more efficient machines and procedures.

Consider a repetitive operation like cleaning cuts, for example. Using on-track equipment, often only a temporary solution is possible, as side-ditch material plastered on the slopes falls back into the ditch. Work availability of track-bound equipment is also drastically reduced waiting for revenue trains to clear. One railroad found its crews were spending up to 80 percent in "spot time."

Contrast this with modern earthmoving equipment. The flexibility of these machines can permit more permanent solutions—flattening slopes and setting out side ditches.

In addition, machines are available for more jobs more of the time. One midwestern railroad uses a Cat No. 112F Motor Grader for lowering main tracks, sloping embankments, etc. In a 26-day period it traveled 245 miles on highways—spent 84 percent of the time in productive work, 16 percent travel time.

Off-track flexibility and high productivity with Cat-built equipment—well worth investigating.



This Cat No. 14 Motor Grader, equipped with special scraper and bucket attachments, is lowering the subgrade along an eight-mile stretch of an eastern railroad.

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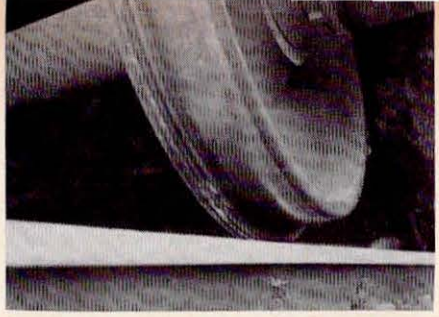
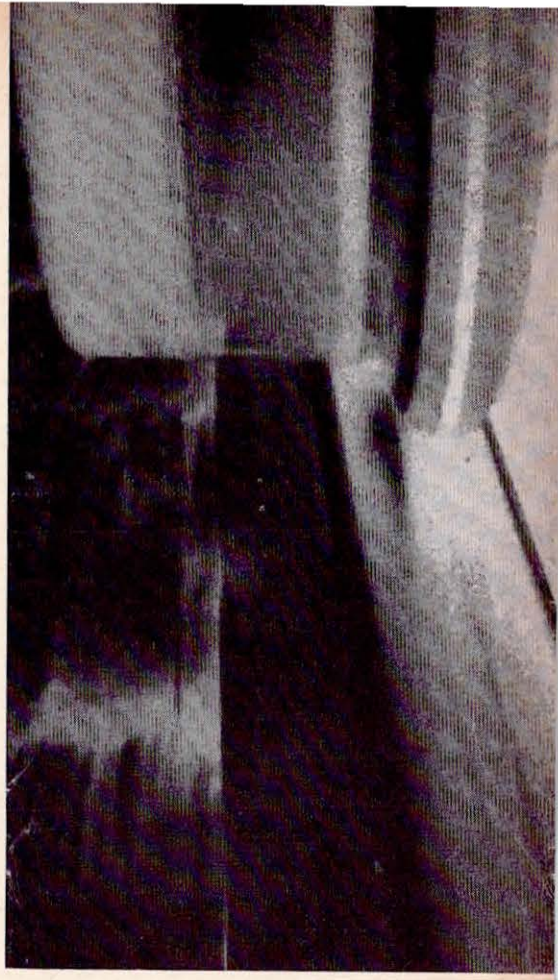




CURVE ELEVATION of 6 inches and high deviation in cross level caused wheel to ride rail head at 12 to 18 mph (right). Tight gauge made empty car climb outer curve rail (above) when loaded car did not.

Why this wheel wants to climb the rail

Why do car wheels sometimes climb the rails resulting in derailments? This question is especially apropos in these days when new types of equipment have appeared on the scene. In what has turned out to be an outstanding example of scientific detective work, the AAR's research staff has been probing deeply into this question. Basic to the investigation has been a study of the vertical and lateral forces exerted by the wheels of equipment and what causes them. In this effort the researchers have combined theoretical analysis with measurements and observations made under controlled conditions in the field. No claim is made that all the questions have been answered, but at least Mr. Magee and his staff now have a picture of the conditions under which a wheel is liable to climb the rail.—Editor.

By G. M. MAGEE*

All railroads are subject to occasional derailments, most of which can be directly related to a track or equipment defect or man failure. For some, however, the cause is very difficult to determine. For these it is necessary to thoroughly search for all clues, to carefully analyze all theoretical possibilities, and perhaps arrive at a conclusion on the basis of circumstantial evidence as to what was the most likely cause.

It is, of course, necessary to determine the cause so that measures can be taken to avoid other derailments from the same cause in the future. The purpose of this article is to present data that have been obtained by, or made available to, the Research Center on tracking problems with the thought that these data may be helpful in solving "the case of the climbing wheel" in those instances where the cause is not readily apparent.

● **Effect of dynamic braking.** Dynamic braking on locomotives, and recently extended dynamic braking which increases the braking effort from the locomotives at the lower speeds, has the effect of placing the entire train in compression. This causes the train to act as a long column, restrained from point to point in the vertical plane by its own weight and in the lateral plane by flange contact against the rails. It is an engineering fundamental that a member in compression is not as stable as a member in tension. The effects of dynamic braking need to be considered in tracking problems where it might be a significant factor.

Disregarding the relatively infrequent use of pusher service, the compression effects from dynamic braking are greatest next to the locomotive, diminishing to zero at the end of the train in a relation depending upon the train resistance for successive cars (taking into account rolling, grade, and curve resistance) and the decelerating force. It is sometimes helpful in analyzing the cause of a tracking problem to calculate the forces acting at the point in the train where derailment occurred.

The amount of dynamic braking from the locomotive will vary with the size of the locomotive, the number of units used, and the amount of dynamic braking as measured by amperes of current generated. Locomotive builders can furnish a diagram showing this information for each type of locomotive. An approximation may be obtained from the diagram (shown on p. 20) for a six-axle locomotive for the maximum dynamic braking effort attainable at various speeds. For locomotives having four axles, the values indicated in the diagram should be reduced by one-third.

It is the practice on some railways

*Director of Engineering Research, AAR Research Center, Chicago

to restrict the amount of dynamic braking to some set amperage. If the amount of amperes being generated in dynamic braking is known, then the braking force for that amount of amperage can be taken from the diagram for each locomotive used and totaled to give the combined dynamic braking force.

● **Decelerating force.** The rolling resistance of the train varies with speed and the weights of the individual cars but at speeds up to 20 mph can be taken at 4 lb per ton for loaded cars and 6 lb per ton for empty cars for estimating purposes. The curve resistance can be taken as 0.8 lb per ton per degree of curve (4.0 lb per ton for a 5-deg curve) and the grade resistance is 20 lb per ton times the grade in percent. The force required to decelerate a train is given by the formula:

$$F = \frac{.03511\ (V_1^2 - V_2^2)}{S} W$$

in which

F = decelerating force in pounds.
S = distance in feet.
V_1 = initial velocity in mph.
V_2 = decelerated velocity in mph.
W = weight of train in pounds.

Thus, the decelerating force required to slow a train of 3000 tons from 20 mph to 10 mph within a distance of 500 ft is

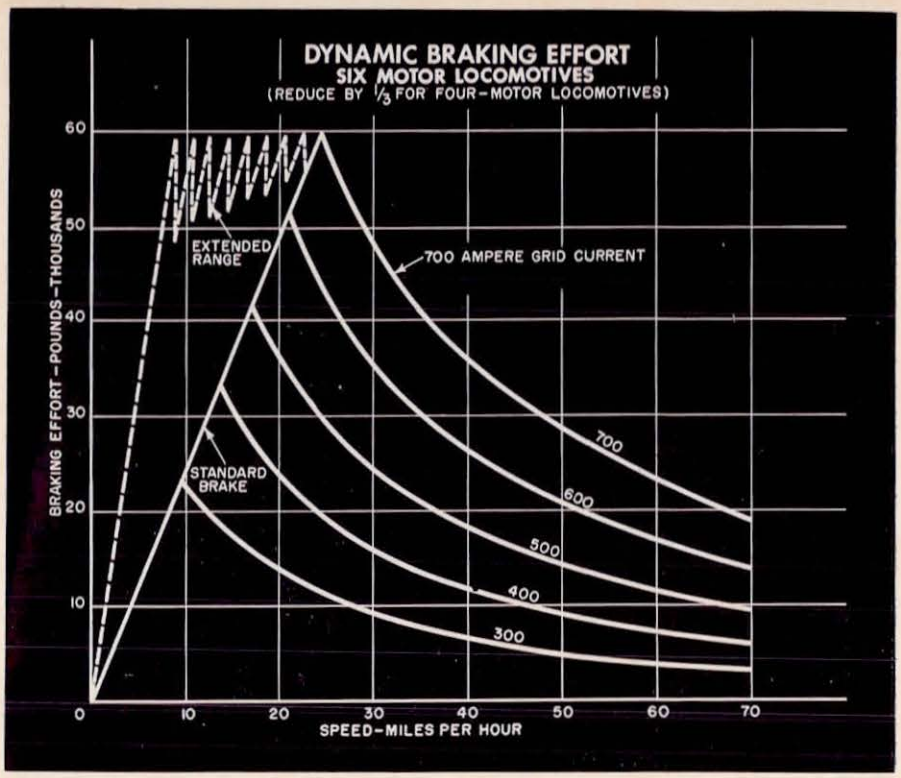
$$F = \frac{.03511\ (400\text{-}100) \times 3000 \times 2000}{500}$$

$$= 126{,}400 \text{ lb}$$

To make use of this formula it will be necessary to have a speed tape from the locomotives and to determine from it the values of V_1 and V_2 for a selected distance just before the derailment occurred. The decelerating force so calculated can be helpful in checking on the amount of dynamic braking or buffing force calculated from the reported amperage of current generated, if information is available on this.

● **Figuring lateral force.** With an estimate made on the amount of buffing force in the couplers at the point of derailment, the next consideration is the angle of the couplers with the car body. With the amount of the buffing force and the coupler angle known the lateral force acting on the car body at coupler height can be calculated. And from this can also be calculated the lateral force acting at each truck.

Just what is the significance of this lateral force on the truck, once it has been determined? Derailment of the wheel can occur by the flange climbing the rail or by turning the rail over. We do not know as much as we would like as to the ratio of lateral force to vertical force that would produce either



DYNAMIC BRAKING'S EFFECTS

Braking effort curves for six-motor locomotive show the capacity for developing high retardation and for putting entire train in compression.

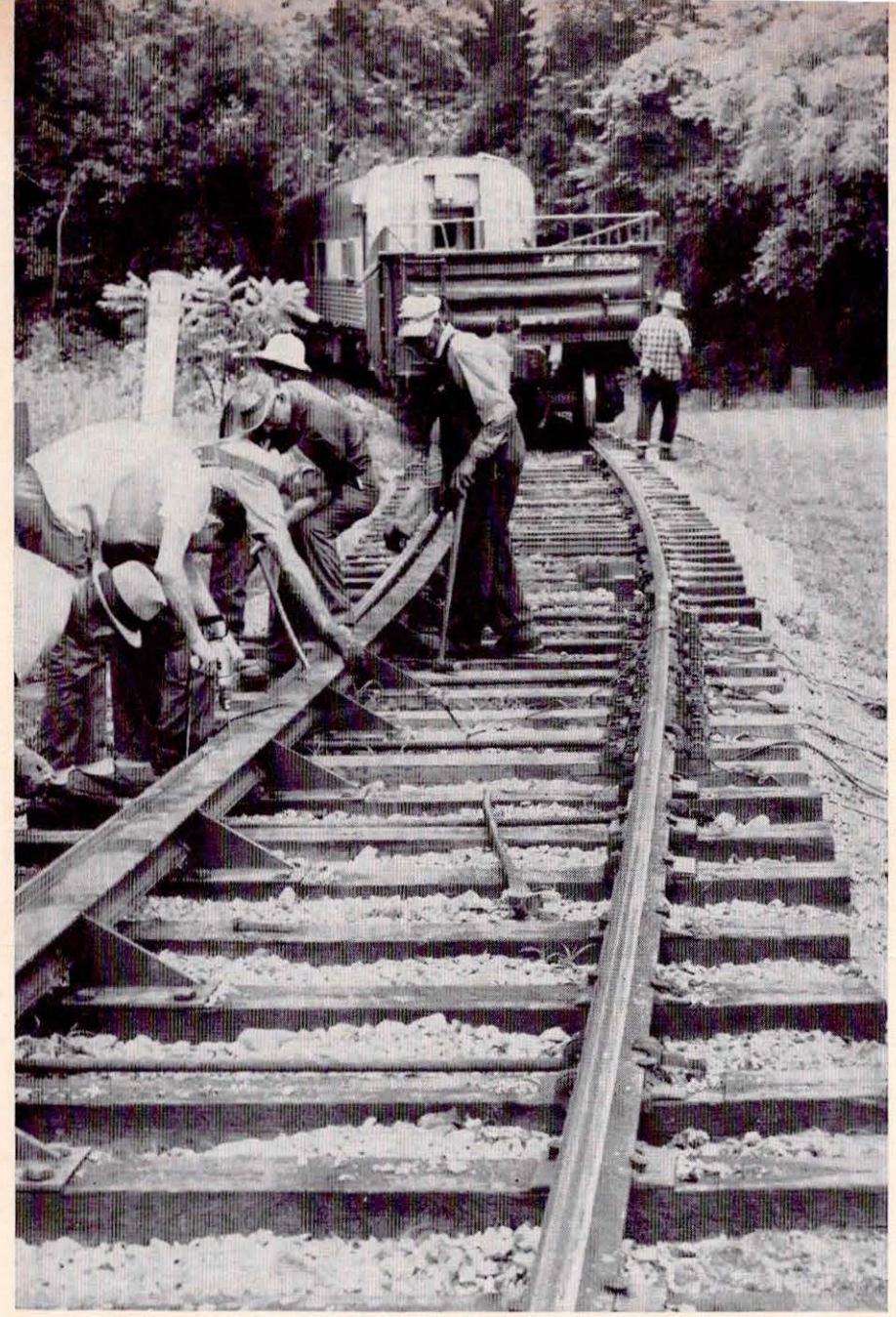
flange climbing or turning over the rail. The shape of the flange contour and the coefficient of friction between the flange and gauge corner of the rail are the two most significant factors. A new wheel would be expected to climb at a lower lateral to vertical ratio than a wheel with a flange worn to a vertical face unless the flange was worn so badly that it had a sharp edge that might gouge into the rail. Calculations based on a new wheel contour and a coefficient of friction of 0.30 indicate that a lateral to vertical ratio of 1.29 would be required to cause flange climbing.

● **What field tests showed.** In an attempt to obtain some experimental data on this, tests were made last summer with vertical strain gauges on the rail to measure the lateral force applied by the wheel to the rail. Lateral force was obtained by tightening the track gauge gradually throughout the instrumented location and pushing a car slowly through it, recording the vertical and lateral wheel loads produced. The rail was 100-lb, fully tie-plated on a 9-degree curve with 6 inches of elevation.

In the first attempt, the gauge was tightened 1¾ inch to a minimum track gauge of 54¾ inches. Both a loaded 100-ton coal car and an empty gondola car were pushed through the tightened gauge without the flange climbing the rail. In the second attempt, the gauge was tightened 2½ inches to a minimum of 54 inches. This time the wheels on the empty gondola climbed the outer rail, but an 80-ton loaded hopper car passed through without derailing. The rails spread apart at the top to let the wheels through and then returned to normal position without any "permanent set" of the track gauge; i.e., it returned to the 54 inches.

● **The critical ratio.** Analysis of the records for the empty gondola car showed that the wheel flanges climbed the rail at a ratio of lateral to vertical wheel load of approximately 1.0. Another trial with the gauge side of the rail head greased manually with a graphite grease of the type used in track lubricators produced wheel climbing at a slightly higher ratio of approximately 1.1. Although data are desirable under conditions that more nearly represent those under which derailments actually occur, nevertheless this improvised procedure does serve to give some idea of the ratio of lateral force to vertical wheel loading that might result in derailment.

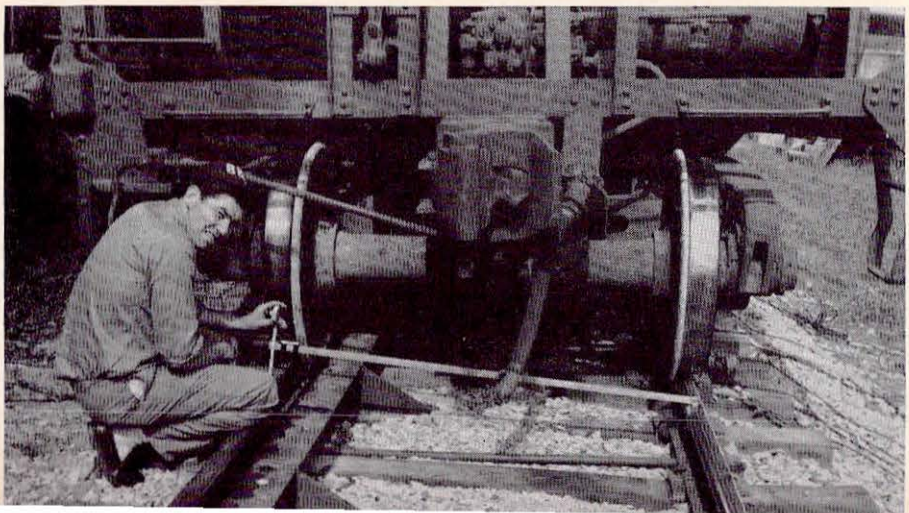
This ratio is in reasonably close agreement with a ratio of 1.1 developed in a study made on the British Railways. The Japanese National Railways have established a permissible ratio of 0.80 in their operation on the New Tokaido Line, which, of course, is intended to provide sufficient leeway to insure against derailment.



TRACK GAUGE ON CURVE was reduced to 54 inches to determine the ratio of lateral to vertical force which is necessary to produce climbing of the flange. Roller bearing tie plates were used in this test section to permit measurement of the lateral force applied to the rail by the wheels. Vertical wheel loads were determined by strain gauges applied to the rail.

Test track is on L&N line

ROLL ACTION of 100-ton hopper cars was studied by shimming the rail opposite the joints to give a low-joint effect. Cross level of this simulation is here being measured. The guard rail was installed to prevent derailments.



As indicated, the lateral force on the truck may be calculated. However, it is also necessary to determine how much of the lateral force is resisted by each rail in the track. If the lateral force is large enough to produce uplift of the wheels on one rail, the entire lateral force will of course have to be restrained by the other rail. It is important to recognize that derailment is not likely to occur from the wheels that are uplifted in this manner but rather from the wheels that are exerting the lateral force against the opposite rail.

- **Force not equally distributed.** Test measurements have shown that the lateral force on a truck is not distributed exactly equally between the two axles of the truck. Under heavy drawbar pull on a sharp curve with the couplers angled to produce high lateral force against the low rail, one axle has been found to take 60% of the total lateral force of the truck against the low rail. This proportion may be used to arrive at an estimate of the maximum lateral force exerted by a single axle against the rail.

Two questions remain: how much of the lateral force on an axle is exerted by each wheel and what is the vertical loading of each of the two wheels? There is an interrelationship between these questions because the lateral force on an axle tends to throw more of the axle loading on one wheel, and the amount of lateral force carried by the wheel with the lesser wheel load will be determined by the amount of wheel load and the coefficient of friction. This may be taken at 0.25 for the purpose of estimation.

- **Finding the wheel loads.** Now comes the determination of the vertical load on the axle and its distribution between the two wheels. The average load per axle can be determined by dividing the total weight of the car by the number of axles if the car is uniformly loaded. If not, as for example a TTX car with a loaded trailer on one end, it will be necessary to calculate the amount of weight carried by each truck. For example, these calculations for one such car involved in a derailment showed that 88,000 lb, or 66% of the total car weight, was carried by the truck on the loaded end and 45,000 lb or 34% was carried by the truck on the light end. In this case, the average weight per axle must be calculated separately for each truck.

- **Slack also a factor.** Another condition that sometimes is a factor in derailments and which affects not only the lateral force but also the distribution of vertical wheel loadings is slack run-in or run-out. In some cases, this may be quite an appreciable factor. For example in the case of the TTX car

AAR MOBILE LABORATORY AT TEST

Test runs induced rolling action in string of 100-ton hopper cars. AAR's instrument truck measured lateral and vertical loading of the rail.

with one loaded trailer, a slack jerk on the unloaded end would produce an unloading of the truck on the light end due to the mass of the truck trailer and the height of its center of gravity above the coupling line.

In one study made, an acceleration of 1.5 g (an amount which has been measured during slack action in TTX cars) would produce a calculated unloading of the truck at the light end of 11,000 lb, which would reduce the truck loading at the light end in the example cited to 34,000 lb. Still a further consideration is that the same slack jerk would tend to unload one axle of the truck at the light end by an amount that can be calculated. In this same study this effect was calculated to reduce the weight on one axle of the truck at the light end by 1400 lb and to increase the weight on the other axle by the same amount.

After the minimum axle load has been determined it is necessary to calculate its distribution between the two wheels of the axle. If the derailment occurred on a curve the unbalanced elevation, spring deflection, and center-of-gravity height should be used to calculate the proportion of load carried by each rail. This proportion can then be applied to the minimum axle load just determined. For empty TTX cars, or the empty end of a TTX car loaded at the other end, this step can be eliminated as the center of gravity height is not far enough above the rail to have a significant effect on load transfer between the two wheels of an axle. For the TTX car loaded on one end the torsional stiffness of the car body is not enough for that end to have a significant effect on the light end.

● **Lateral force and vertical load.** The next step is to determine the weight transfer due to lateral force. For purposes of illustration let us assume that the axle load on the light end of the TTX car is 15,600 lb, distributed 7,800 lb on each rail without any lateral force acting. Assume a lateral force of 12,000 lb is applied to the track by this axle. The calculated weight transfer due to the lateral force is 6,900 lb. The load on one wheel is then 900 lb and on the other wheel 14,700 lb.

Since practically all of the axle load has been transferred to one rail by the lateral force, the amount of lateral force exerted by the other wheel would be small (900 x 0.25 or 225 lb). Therefore, the ratio of lateral force to vertical wheel load for this condition is

$$\frac{11{,}775}{14{,}700}$$

or 0.80. A lateral force of 15,600 lb would be required to give a lateral to vertical ratio of 1.0 at which ratio, as stated previously, flange climbing might be anticipated with relatively unworn wheels.

It is interesting to note that the amount of lateral force required to produce flange climbing increases as the axle load increases. If the minimum axle load in the foregoing calculations had been taken as 28,000 lb (still a light axle load) a lateral force of 24,300 lb would be required to effect a complete weight transfer and a lateral force of 28,000 lb would be required to give a lateral to vertical ratio of 1.0.

It would be expected, therefore, that flange climbing due to lateral force from drawbar force and coupler angulation would be most likely to occur with lightweight cars, such as empty TTX cars or empty cars of lightweight construction.

● **When the rail turns over.** Some derailments have occurred where indications on the ground were that the rail had been turned over. Calculations have been made in an effort to arrive at some idea of what ratio of lateral to vertical loading would produce this condition. The calculations are complex because the torsional rigidity of the rail must be taken into account, also the resistance to rail overturning afforded by the track spikes, and the effect of the weight from the wheels of the adjoining cars.

The heavier rail sections have greater torsional rigidity; the greater height results in a greater overturning moment from the lateral force; and the wider base gives greater resistance to overturning. The calculations were made neglecting the hold-down resistance of the spikes because this is the most unfavorable condition that could exist and, further, no information was available on what this hold-down resistance might be.

A condition of overturning was assumed to be reached where the rail had turned outwardly enough to permit the wheel tread to drop inside the opposite rail. Calculations for an empty 85-ft TTX car with a loaded hopper car at each end showed that a lateral truck force of 16,000 lb would be required to produce this condition on 100 RE rail; 24,000 lb on 115 RE rail, and 34,000 lb on 132 RE rail. These values would be increased in some relation to the amount of hold-down resistance of the spikes.

Derailment due to flange climbing or rail overturning may result either from drawbar pulling or buffing forces if the conditions discussed relative to the ratio of lateral to vertical wheel loading are developed.

● **TTX cars and reverse curves.** Another derailing problem that has occurred in a few instances is with the operation of TTX cars on sharp reverse curves with no spirals and very little tangent between them. These cars are designed to operate from tangent around a curve of 15 degrees when coupled to a short car. However, two 85-foot TTX cars coupled together will not have sufficient clearance in the coupler pockets to negotiate a 10-degree reverse curve with only a few feet of tangent in between without greatly increasing the lateral force.

This is a condition that might be encountered in a trailing movement through one turnout followed by a facing movement through a turnout to the opposite side, with the headblocks less than 10 feet apart.* For such conditions, even if there is clearance for the couplers in the pockets, the coupler angle may be large enough to cause derailment of some types of cars if combined with high buffing or pulling forces. One solution is to provide 100 feet of tangent between sharp reverse curves having no spirals, if this can be done. The AREA Track Committee is now studying this matter with the view of making suitable recommendations.

● **Tests with hopper cars.** Derailments of 100-ton hopper cars are in a different category from those involving lighter equipment. Last summer an extensive investigation was started on the L&N in an effort to determine the track conditions that might contribute to a

*A booklet is available from the Research Center entitled "Railway Car Curve Negotiation, Standard Method of Calculation," which is helpful in assessing these track conditions.

derailment due to the rocking of these cars induced by staggered rail joints at a critical speed of 14 to 18 mph. Also included in the investigations were variations in the truck design that might make the cars more resistant to rocking.

A 9-degree curve was selected on an industry spur. The rail was 100 RE in good condition, fully tie plated on good ties, and with a good crushed-rock ballast section. The selection of this location offered two advantages. The spur was switched only at night, so full use of the track could be made during daylight hours. Also, in the event of a mishap there would be no delay to scheduled trains.

A full report will be made on this investigation when it is completed and only that portion relating to the effect of track conditions will be touched on here. First, the track was put in good alignment and surface, with a uniform elevation of 3 inches. A specially designed guard rail was placed inside the low rail with a flangeway opening of 3½ inches. This would permit the wheel flange to climb the high rail and run along on top of it, but not go far enough to drop off on the field side. At the ends of the guard rail the flangeway was brought in to a 2-inch width to bring any flanges running on top of the high rail back into proper position before they left the guarded section of track.

• **Getting the "low joint" effect?** At the center portion of the guarded section, twenty consecutive joints (ten on each rail) were selected for inducing roll effects. For the first series of tests, shims were placed under four or five ties opposite these joints to make the joints one-quarter inch low compared to the general cross level of the track.

Complete instrumentation was provided to record the tracking performance of the test car, including a motion picture camera focused on the lead wheel of the lead truck on the high rail. Measurements of vertical loads on both rails and lateral forces on the high rail at eight successive ties between test joints 7 and 8 in the high rail were also recorded. With the type of fully loaded 100-ton open hopper car that had given trouble in unit-coal-train operation, the tracking performance on the curve portion with the joints one-quarter inch out of general cross level was better than on the part of the curve outside of the test section. No induced roll action or wheel lifting was observed.

For the next series, the twenty joints were shimmed to be one-half inch out of general cross level. Here again the car performed very well at all ranges of speed up to 30 mph although there was a definite induced

(*Continued on page* 42)

AREA plans short—but busy—session in Chicago

Members of the American Railway Engineering Association will meet in the Conrad Hilton Hotel, Chicago this week for the AREA's annual meeting.

This year's session will run one and one-half days rather than the usual two and one-half days. The abbreviated session was arranged after it was decided to hold a second meeting Oct. 10 during the second Railway Progress Exposition. The Exposition was rescheduled to Chicago's International Amphitheater following the destructive fire at McCormick Place on Jan. 16.

Except for its length, the AREA meeting will have all the characteristics of a full-fledged convention. It will include reports by all of the association's 22 standing committees, eight special features and the annual luncheon, set for Thursday noon.

Selection of R. R. Manion, vice president of the AAR's Operations and Maintenance Department, as the keynoter of this week's meeting has come to be traditional with the AREA. W. A. Johnston, board chairman of the Illinois Central, will be principal speaker at the luncheon.

The *Railway Age* coffee bar, long a traditional adjunct of the AREA convention, will again be operating this year. Open daily at 8 a.m., it will be located in the Williford room on Thursday, and in the Astoria room on Friday.

THURSDAY MORNING

March 9 — 9:00 to 11:50
Waldorf Room

Presidential Address—J. M. Trissal.
Reports of executive secretary Earl W. Hodgkins and treasurer A. B. Hillman, Jr.
Greetings from the Railway Engineering-Maintenance Suppliers Association—Chas. J. Miller, president.
Greetings from the Combined Railway Suppliers—Kenneth Cavins, permanent chairman.

Keynote Address—R. R. Manion, vice president, Operations and Maintenance Department, AAR

Reports of Committees
- Maintenance of Way Work Equipment
- Water, Oil and Sanitation Services
- Electricity

Highways

Address—"Evaluation of railroad air rights for highway use" (illus.), by R. E. Skinner, assistant to chief engineer, Illinois Central. Economics of Railway Location and operation

ANNUAL LUNCHEON

Williford Room—12:00 Noon Thursday

Address—"Full speed into the future," by W. A. Johnston, chairman of the board, Illinois Central

THURSDAY AFTERNOON

2:00 to 5:07—Waldorf Room

New AAR Motion Picture — "New directions in modern railroading"

Reports of Committees
- Wood Bridges and Trestles
- Iron and Steel Structures

Address—"Relocatable structures" (illus.), by T. R. Arnold, general manager, Richardson Homes Corp.

- Engineering and Valuation Records
- Impact and Bridge Stresses
- Ties and Wood Preservation
- Masonry

Motion Picture—"Concrete crossties come of age on American railways," with introductory remarks by G. F. Leyh, railway representative, Portland Cement Association

FRIDAY MORNING

9:00 to 12:45—Waldorf Room

Reports of Committees
- Roadway and Ballast
- Rail
- Waterways and Harbors
- Yards and Terminals

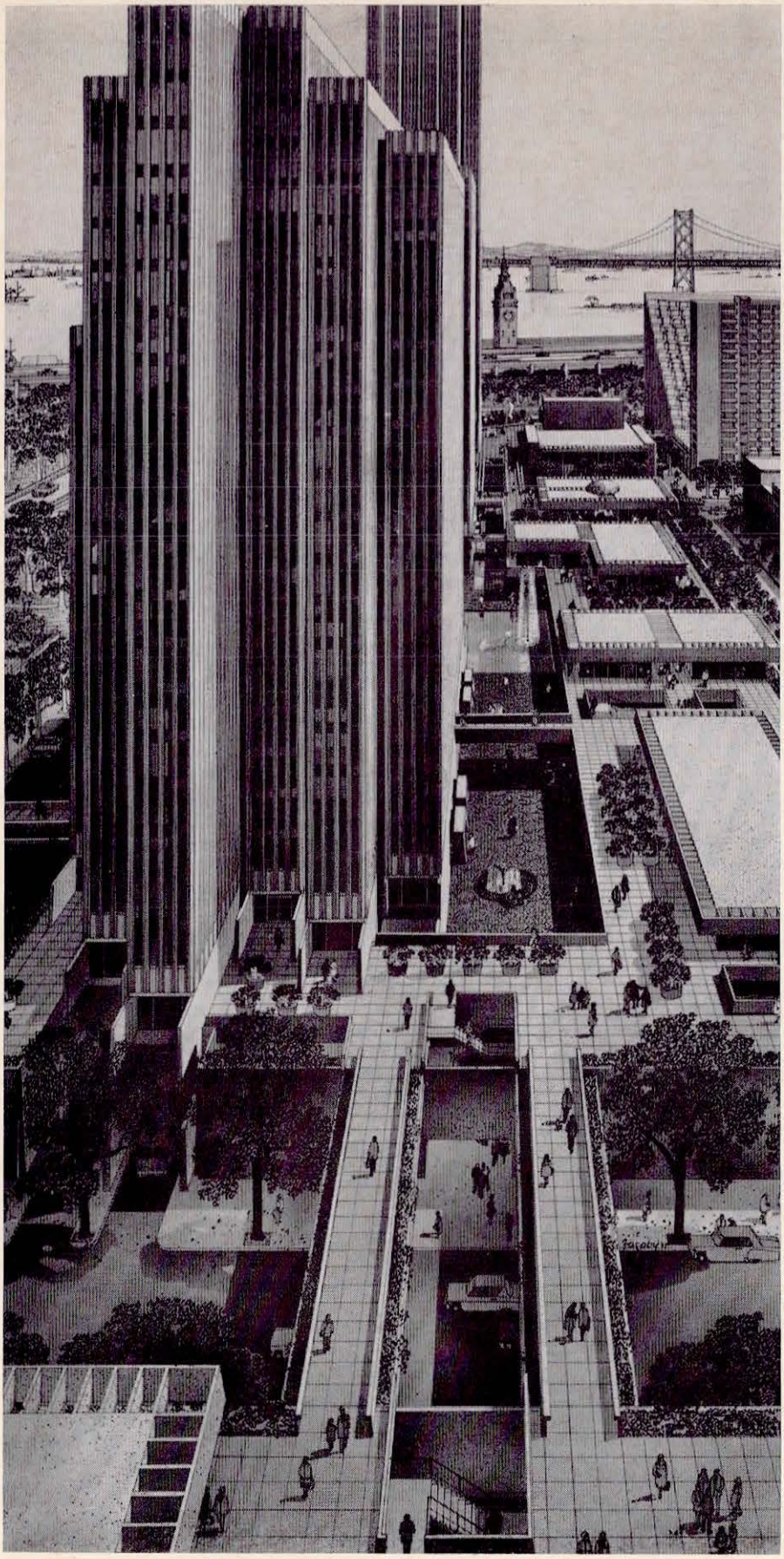
Address—"Piggyback operations using the 'Strad-L-Port' crane" (illus.), by E. J. Brown, assistant vice president—operation, Burlington Lines

- Contract Forms
- Cooperative Relations with Universities
- Clearances
- Track
- Continuous Welded Rail

Motion picture—"Granite metamoraphosed," with introductory remarks by D. H. Shoemaker, chief engineer, NP.

Closing business session
Installation of officers
Adjournment

BART begets a building boom



EMBARCADERO CENTER: This skyscraper complex will rise near BART line.

Transit construction in San Francisco is spurring new development downtown—a $125 million complex among them.

Bay Area Rapid Transit's newly chosen power system will move the trains. And the trains, it is safe to say, will move the economy.

Board Member Arnold C. Anderson —by profession a real estate broker and appraiser—predicted a year ago that property values along the system's lines would be dramatically affected, citing experience in Cleveland, Toronto and elsewhere.

Even now, before the system is operating, some $300 million in new construction is either planned or already in the building stage along the BART right of way.

But this rough estimate may turn out to be far too low: Just last week, David Rockefeller and two associates announced their intention to develop a $125 million complex at the foot of Market Street—three blocks from what will be BART's Montgomery St. station.

• **Rockefeller's new Center.** The complex—to be called Embarcadero Center—will cover five city blocks directly adjacent to the city's financial district and the Golden Gateway Center (a residential development).

Designed to be comparable in scope to Rockefeller Center in New York City, the development will have three skyscraper office buildings (one of them 60 stories high) with total gross office space exceeding 2.8 million sq. ft.

The Center will also have a new 800-room hotel—the city's largest—an entertainment center with a cluster of theaters, art galleries, restaurants and shops.

• **How will BART look?** Will BART itself be a visually stimulating counterpart to all the new downtown developments, or a shabby neighbor? A lot will depend on Dr. John E. Burchard, newly appointed visual design consultant to the BART board of directors.

Dr. Burchard is Dean of Environmental Design at the University of California at Berkeley, Dean Emeritus of the School of Humanities, Massachusetts Institute of Technology, and a trustee of Mt. Holyoke College.

He took up his new duties at a time when controversy has been raging over the quality of BART's designs. Last September, the system's two architec-

tural consultants called a press conference to announce their resignations from BART. Their parting shot was a bitter complaint that their design proposals had been either ignored or "butchered" by BART and its consultants.

This was the cue for the architectural columnist of a local newspaper, who launched salvo after salvo condemning BART's architectural failures.

Dr. Burchard lost no time presenting BART General Manager B. R. Stokes with his own analyses of these charges:

"One is tempted on the one hand to ignore the lazy fulminations of an 'architectural critic' who in one paragraph calls prestressed construction 'revolutionary' and in another says that 'contractors have readily bid on thousands of prestressed designs in this country:' who must know what a vault is, but does not bother to discriminate between it and a gently curved ribbed ceiling.

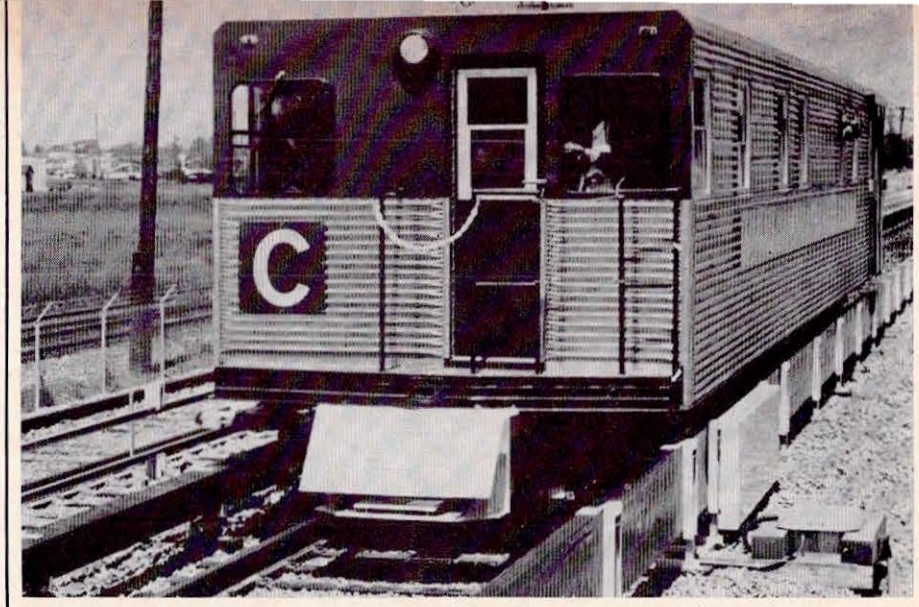
"One could say for example that it is not the BART stations which have been 'butchered' but the truth about them. One could add that it is not the columns of the stations which are old-fashioned but the 'brutally bumbling' Victorian invective which conceals so many inconsistencies, and falsehoods and half-truths."

BART's new consultant did not go so far as to agree in all details with everything designed so far. Neither did he find the criticisms of the two departed architects uniformly lacking in merit. He called instead for viewing these questions "In a context of architectural realities, and not in a framework of 'good guys' and 'bad guys,' of brilliant friends and stupid enemies."

● **Shift the blame to BART.** One of the main contentions in the critical newspaper series last fall was that the environment adjacent to planned transit stations is being ignored or downgraded. The management's rebuttal at the time was that numerous attempts had been made to interest the communities through which the system will pass in just these questions, with only partial success.

And, the management added, BART's responsibility can go no further than the BART property line.

Dr. Burchard supported this contention whole-heartedly. "No reasonable person," he said, "could expect BART to spend money for which it was trustee in doing more than suggesting to a community what was possible. . . In retrospect, it might be contended that BART should have gone directly to the people of the communities with dramatic models to create some kind of grass roots demand. In my opinion, this would have been beyond BART's charter, and moreover wouldn't have worked." ■



COMPARISON SHOPPING: Data from trials with d-c power (third rail, above left) were compared with those of three-phase system (right). The former won.

BART picks out its power-supply system

Engineers weighed merits of competing systems, finally picked high-voltage d-c for powering the 75-mile transit network.

Direct current—yes; alternating current—no. That is the decision of San Francisco's Bay Area Rapid Transit on the power distribution system that will be installed along the 75-mile system now being built. (RA, Feb. 6, p. 11).

In addition to a 1,000-volt d-c distribution system, BART directors have accepted recommendations that a "chopper controlled" propulsion system be utilized on the cars.

● **21-month appraisal.** Decisions on distribution and propulsion were based on more than 21 months of intensive testing and evaluation by BART engineers, consultants, and a panel of operating experts from the Toronto, Cleveland and Chicago transit systems. Most spectacular phase of this appraisal has been the months of testing conducted on the 4½-mile Diablo test track east of San Francisco—a program which BART General Manager B. R. Stokes said was to make up a "half-century lag in rapid-transit research."

Although not many technological barriers may seem to have been breached as BART opted for 1,000-volt, third-rail d-c distribution (existing U.S. systems use 600-volt d-c), Stokes says that requirements for high performance, maximum reliability and economy are being met.

Engineers had earlier rejected the overhead trolley or catenary distribution system for reasons of esthetics and economy. In choosing 1,000 over 600 volts d-c, the determining factors were needs for meeting higher-than-standard performance and minimizing the weight of car-borne equipment.

● **Three-phase a-c.** At the test track the competitor with the winning system was not 600 volts d-c, but 4,160 volt, three-phase a-c. While three-phase is commonly applied to relatively stationary industrial and commercial electrical equipment, there had been no previous attempt to apply it as transit power with third-rail distribution. Many railroads throughout the world (including the Pennsylvania and New Haven) use single-phase a-c, as do some foreign transit systems. Such power is distributed by overhead catenary systems.

The unique multi-phase concept which BART tested (and rejected) involved a trackside three-conductor "third rail" with insulation barriers between the conductors. A potential attraction of a-c distribution was the possibility of utilizing regenerative braking in which electrical current developed by the slowing train would be delivered back to the power system.

● **Too complicated.** The experimental propulsion system and trackside current collection method on which

TRANSIT ROUNDUP

LIRR takes a peek at new car

Dr. William Ronan, chairman of the Metropolitan Commuter Transportation Authority, announced that final specifications on the 500 cars to be ordered for the Long Island will be sent to car builders this week.

"In 60 days we should have back their bids," he said. "And some time in June we'll order the vanguard—probably 200—of the 500 cars we plan to buy for the railroad."

Dr. Ronan, Gov. Nelson Rockefeller, New York City Transit Commissioners John J. Gilhooley and Daniel T. Scannell and other political and transport leaders turned out last week for a preview in Penn Station, New York of the new cars. The preview was in the form of a full-scale half-length mockup of the interior designed by Karl Sundberg of Sundberg-Ferar, Inc., and a quarter-scale model of the exterior.

Said Gov. Rockefeller: "The model of the new cars for the new Long Island represents the most advanced concepts of engineering and industrial design."

The state's chief executive is developing a program for upgrading mass transport of all kinds in the state, and it may include control by the MCTA of the New Haven's passenger operations within the state and of the New York City Transit Authority.

Philadelphia

The long-planned northeast extension of the Broad St. subway is getting closer.

E. L. Tennyson, city transit engineer, announced that a slight change in alignment would make for a straighter right of way and reduce construction costs, now estimated at $104.5 million.

Washington, D.C.

The 12 directors and alternates—11 men and one woman—who comprise the board of the new Washington Metropolitan Area Transit Authority have been sworn in.

As far as construction schedules go, Warren D. Quenstedt, Deputy Administrator of the interim National Capital Agency said: the first actual construction will come "by the summer of 1968."

Honolulu

The City Council's mass transit committee called on the full Council to get a rapid transit plan going.

The Oahu Transportation Study is nearing completion of the first phase of a survey of transport needs.

NEW LIRR LOOK

The Long Island will soon order up to 500 cars to this design. Cars will be air-conditioned, and capable of speeds up to 100 mph.

this concept depended were too complicated in design and too unreliable to be adopted for regular passenger transit operation "within the immediate future," BART's technical report concluded. It was noted that aside from some economic advantages, most of the recent technological advances in the a-c electrical field are equally applicable to d-c.

D-c won on safety and controllability as well as efficiency and economy. "It will also be at least $4 million cheaper in capital cost," says John R. Asmus, chief electrical engineer for the BART joint-venture engineering consultants, Parsons Brinckerhoff - Tudor - Bechtel, who presented the report.

● **Five propulsion systems.** Tested with the two power systems were five car propulsion systems whose motors and controls were specially developed by various U.S. electrical manufacturers. In addition to d-c distribution, the experts recommended that a "chopper controlled" propulsion system of an advanced design be applied to BART cars. It will incorporate the latest in solid-state control devices.

Advantage of such propulsion, BART was told, would be its ability to deliver smooth and stepless changes in power application which are not obtainable for fully automatic train operation with present electro-mechanical control devices. The system will have the desired control characteristics for dynamic braking in which power generated by decelerating motors is dissipated in banks of electrical resistors.

Chopper control eliminates the electrical power losses which are inherent in traditional resistance-type acceleration controls. The effective voltage which is applied to traction motors by the new system is produced by the rapid switching on and off of the power supply. Semiconductor devices do this with a speed and precision which could never be achieved by mechanical vibrators or switches. Voltage regulation of conventional propulsion systems is performed in steps with fixed resistances added or removed, and only at a considerable cost for power dissipated.

● **Precise requirements.** Propulsion (which BART engineers term "positive traction") and braking (or "negative traction") are very important in meeting the requirements that trains accelerate to 50 mph within 20 seconds and operate at top speeds of 80 mph. The high speeds and close spacing which are rated essential in attracting passengers will make major demands on the automatic train control system.

Four types of ATC were tested at the Diablo track. The decision—just announced—is that Westinghouse Electric is low bidder on the ATC system. ■

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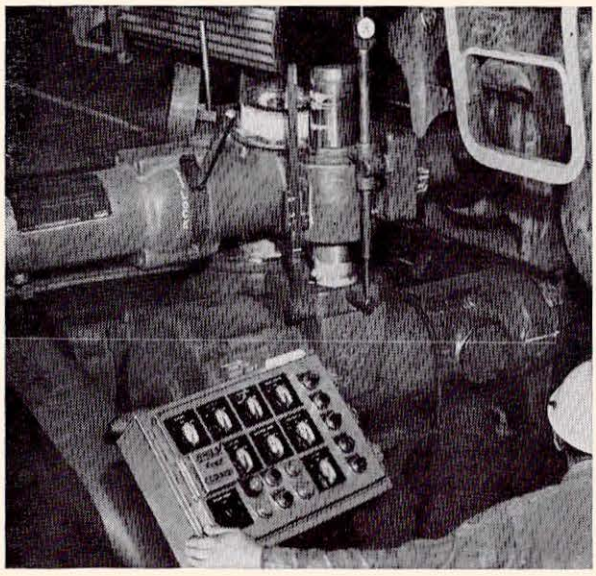

Where do the savings come from? Less time. Less labor. Less-out-of service time. The Standard Wheel Truing Machine permits four or five reconditioning operations per wheel, not three. A true milling machine, it does not have to cut as deeply as lathe tools.

What will your savings amount to? One railroad that kept careful records found the Standard Wheel Truing Machine returned 23.64% of its cost in the first year on the job. Who knows? Perhaps you can do better! One thing sure: You can do no better than to talk with your Standard representative.

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Headway Shrinker

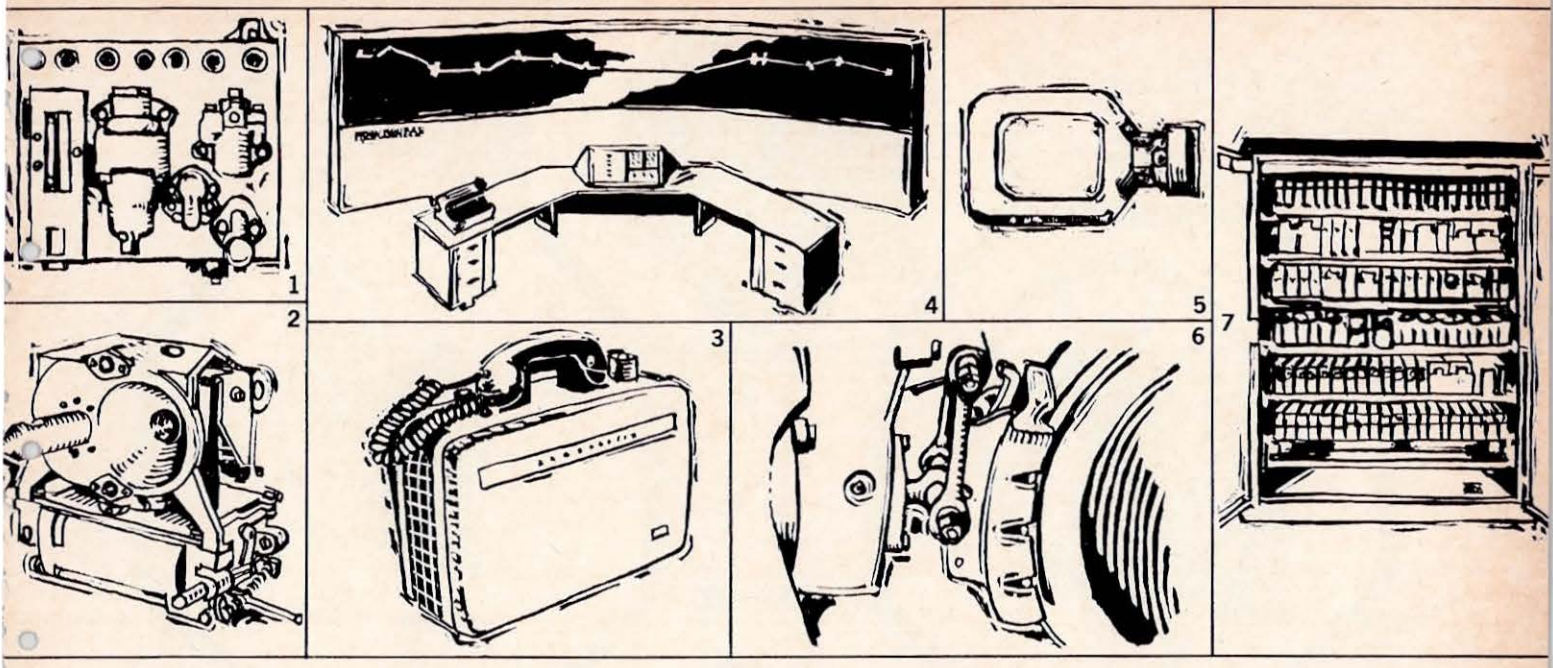
WABCO'S Systems Capability Doubles DRPA's Passenger Capacity

Trains for the ultra-sophisticated Delaware River Port Authority transit system will be equipped with WABCO Automatic Couplers, governed by WABCO's Automatic Train Operation (ATO), and stopped smoothly and reliably by WABCO Braking Systems. Because the ATO automates train spacing, dispatching, routing, starting and stopping, DRPA's highly advanced facility will deliver twice the standard service with the same number of trains.

WABCO-designed wayside and train-carried equipment make possible a speed-up in command communications that sharply reduces headways. As inputs are fed into the ATO they are immediately converted into commands for optimum speed, deceleration, dwell time, train announcing and other functions that are now performed manually. The control center is for monitor purposes only—"management by exception." And the system is absolutely fail-safe.

WABCO's RT-5 Electronic Braking System, "G" Tread Brake Units and COBRA® Brake Shoes combine solid state control technology, pneumatic "muscle" and longer-life superior composition friction material for quiet, positive, comfortable deceleration.

Result: a system so carefully integrated that it provides a 25% reduction in invested capital and maintenance.



WABCO "building blocks"—stepping stones to automated mass transit systems.

1. The G-type Pneumatic Operating Unit provides an infinitely variable control, instantaneously converting electrical impulses into pneumatic force for brake control pressure.

2. WABCO's N-2 Automatic Car Coupler locks in all mechanical, electrical and pneumatic connections simply by bringing the cars together at coupling speed. Built-in benefits include up to 70% weight reduction over previous standard automatic couplers, automatic brake application in unintentional parting of couplers, and 125 fewer parts.

3. Trainphone, a two-way communications package, provides continuous vocal contact between train attendants and control center.

4. DRPA's Master Control panel enables the supervisor to take in the entire system's operation at a glance.

5. WABCO's Identra® equipment automatically identifies each train at wayside locations to insure correct routing to its destination.

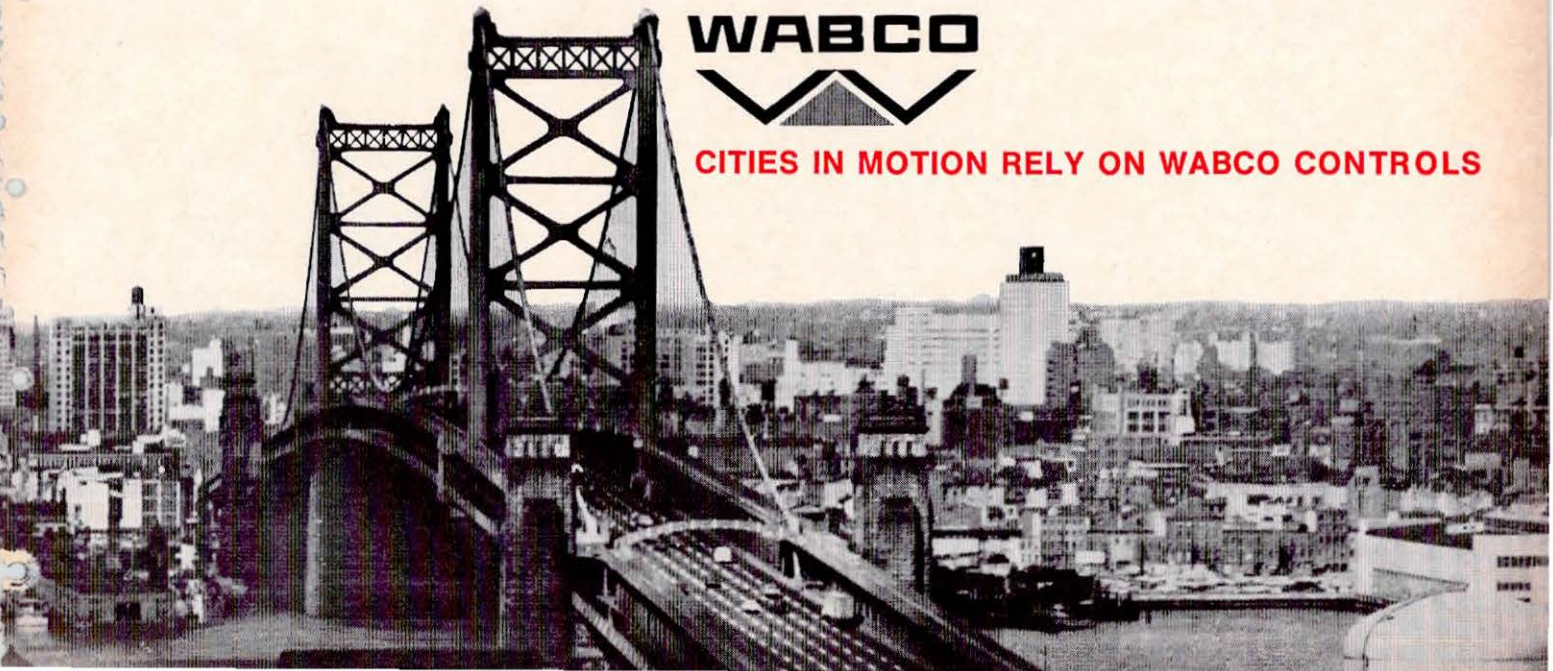
6. COBRA® Brake Shoes last longer, substantially reduce wheel wear and provide 50% better riding quality than off-tread braked wheels.

7. Wayside Transmitters send coded AC impulses along insulated steel rails. These impulses are picked up by train-carried equipment which decodes them and converts them into input commands.

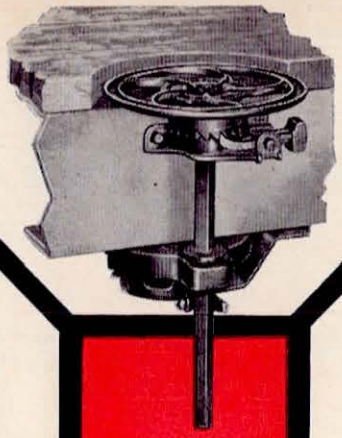
For details on WABCO's combined massportation capabilities, write Mass Transit Center, Westinghouse Air Brake Co., Pittsburgh, Pa. 15218.

WABCO

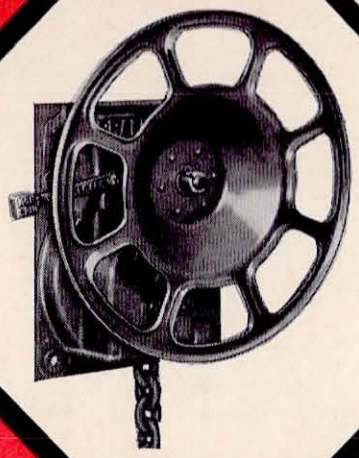
CITIES IN MOTION RELY ON WABCO CONTROLS

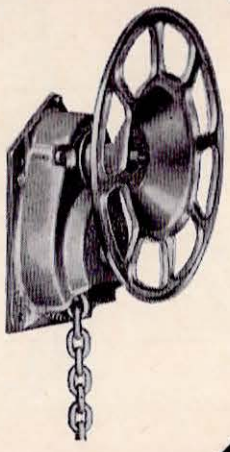


HORIZONTAL
DROP-TYPE HAND BRAKE
Equipco A.A.R. No. 3657
[Drawing No. 20021]
☐ Expressly designed for Flat Cars



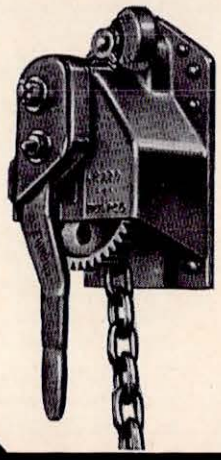
VERTICAL WHEEL
HAND BRAKE
Equipco A.A.R. No. 3750-E
[Drawing No. 10024]
☐ With non-spin 2-way wheel





VERTICAL WHEEL
HAND BRAKE
Equipco A.A.R. No. 4000
[Drawing No. 10040]
☐ With quick release non-spin lever and non-spin 2-way wheel

LEVER-TYPE HAND BRAKE
Equipco A.A.R. No. 3700-B
[Drawing No. 30023]
☐ For Piggy-back Cars and Drop-End Gondolas



NEW! THIN-PROFILE
LEVER-TYPE HAND BRAKE
Equipco A.A.R. No. 5000
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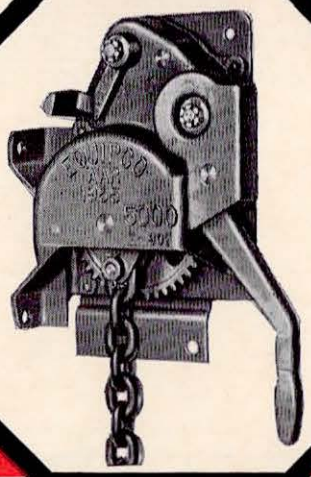
☐ Special design (4½" deep) for Piggy-back-type Cars



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Mexico's capital maps out transit

Money is available, so system will be given a top priority

After years of discussion, Mexico City's plans for rapid transit are now ready to go.

Mayor Alfonso Corona del Rosal, after meeting with President Diaz Ordaz, announced that the project to build a combination subway-surface-elevated network is now definite, and will be given top priority.

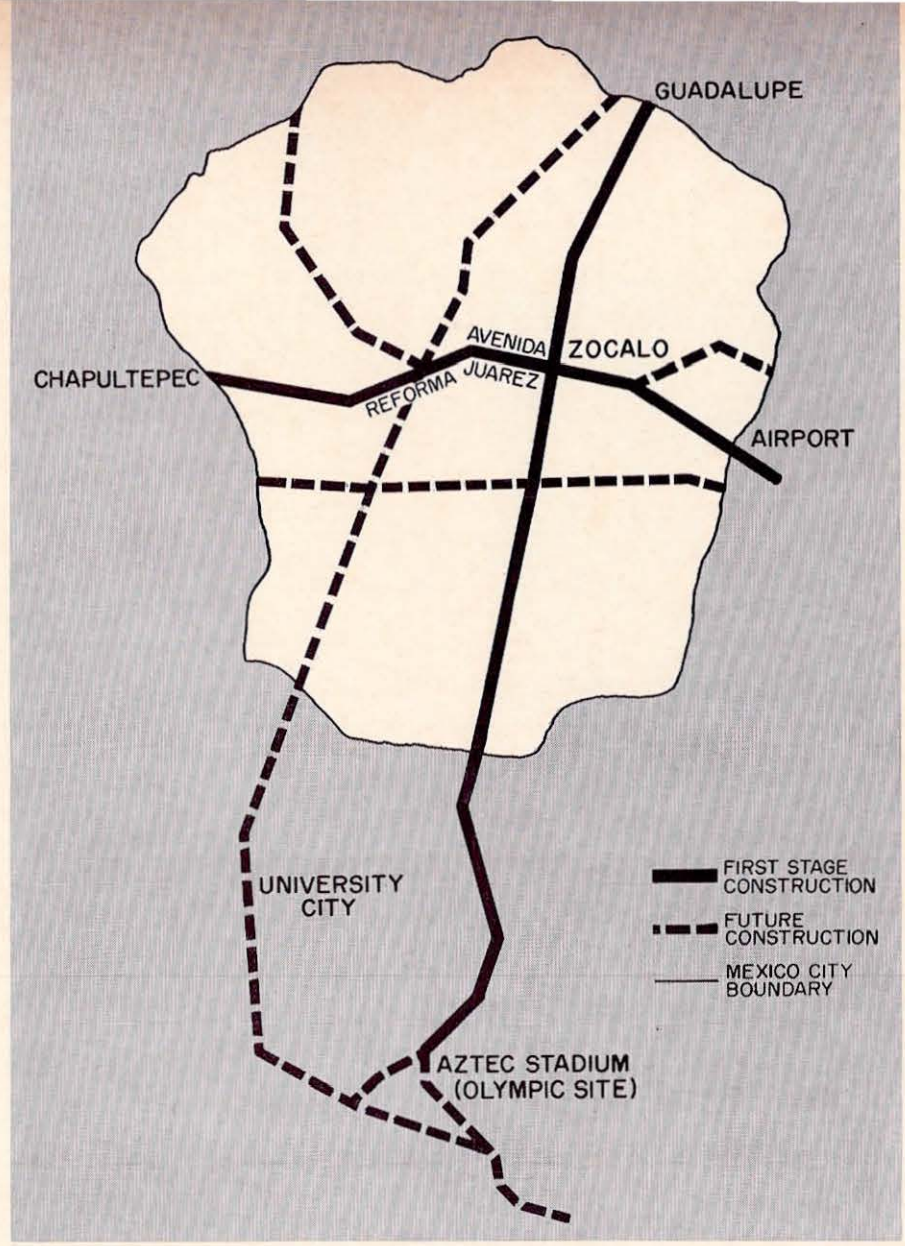
A concessionary contracting company has been formed, and preparations for construction are expected to begin this April. The first phase project calls for completion in three and one half year's time of a north-south and an east-west line bisecting the metropolitan region.

Schemes for bringing mass transit to the Mexican capital have never been lacking in the past. In addition to U.S. consultants and suppliers, their counterparts in France, Britain, West Germany and Japan have all discussed with civic and federal government officials the possibilities of building a transit network in this city of 3.5 million people. Proponents offered schemes for orthodox rapid transit, Safege- and Alweg-type monorails, among other things.

All, however, fell afoul in previous years of two main objections from local parties: difficulty of financing on the one hand, difficulty of construction on the other.

• **High tunneling costs.** It was frequently pointed out that the city rests on a dry lake bed, the soil is waterlogged and is subject to treacherous shifts. In view of this problem, the argument went, engineering obstacles are not insuperable in themselves, but would drive up construction costs.

The picture began to change last year under the pressure of two events. The first was that transit proponents warned the local administration that the deadline to begin building had already been reached, if a system of any sort was to be ready in time for the Olympic Games scheduled for 1968.



Mexico City's subway-surface-elevated rapid transit system will be an east-west, north-south network bisecting downtown, the former line serving the airport.

This touched off lively criticism in the press, which chided municipal leaders for dragging their feet in this matter.

The second event was that financing was eased by the expedient of moving it from the municipal to the federal plane. The federal government enjoys an excellent credit rating with overseas lending agencies, and the Nacional Financiera was able to negotiate a $130 million loan from France's Benque Nationale de Paris without difficulty.

The way was then opened for finalizing plans, and assignment by the government of top priority to the scheme.

• **Olympic deadline: dead.** Even now, it is conceded that the basic system will not be ready in time for the Olympic Games. The already staggering traffic problems of the city threaten to become totally unmanageable by that time, and the local administration has promised to spur phasing in of at least part of the basic system by the time Olympic teams and tourists start arriving.

Whether this is physically feasible remains unclear, in view of the fact that much detailed design work remains to be done.

Considering the large number of preliminary and feasibility studies already accomplished, details of routings, traffic projections, economics and administrative arrangements are reasonably well advanced, and little extra work in those areas will be required, at least for the first phase.

• **Lines bisect in CBD.** As presently envisioned, the system will have a north-south line beginning near Guadalupe (site of a famous shrine north of the city), running south to

(Continued on page 41)

MONEY TALK

BY JOHN MITROS

Clear economic going ahead, says Blair & Co.

Wall Street's first '67 look at the railroad industry's future will be as sweet as the first robin of Spring to railroad managers coming down with bad cases of the investment tax jitters.

Issued by Blair & Co. late in February, the forecast maintains that rail brass will solve problems that have come up with the squeeze on profits from wage increases. Further, the tempo of rail recovery will quicken because of both industry adaptation of new technology and because of built-in societal requirements for more and more transportation at less and less over-all distribution expense to the economy.

Blair & Co.'s institutional securities analyst, W. Glenn Cameron, succintly interprets this outlook for investors: "Rail equities are still selling well below 1966 peaks . . . many of these securities are still greatly undervalued. Furthermore, if the industry is able to demonstrate this year its ability to withstand economic pressures successfully, higher price-earnings multiples could be in evidence by the end of the year. Ratios [of rail share prices] of approximately nine to 11 times earnings have prevailed since 1961. New mergers and industrial acquisitions could also exert upward pressures on current multiples. Despite the exuburant performance of these stocks in recent months, many still afford yields in excess of 5%. We believe the strong performance exhibited during the past six months, both earnings-wise and market-wise, mark only the initial stages of the resurgence of the railroads as the nation's foremost means of moving vast quantities of freight at the lowest prices economically feasible."

Blair & Co.'s Cameron backs his view with analyses of the industry's performance possibilities in '67. The traffic is pegged at 4% above '66. Cameron disagrees with the prophets who think auto traffic will decline as a result of lower auto production. He expects auto traffic to rise. Ton-mile production is estimated at 775 billion for '67. Operating revenues are expected to advance to $11 billion. Net is projected at "a minimum of $930 million." Merger action, says Cameron, will be fast and productive in '67.

Cameron makes some interesting points about the competitive capability of railroads on the rise. He feels the downtrend in rail rates is over, now that the massive hemorrhages of tonnage to other forms of transport have been successfully tourniqueted by industry managers. "Because of the present rate structure, industries seeking to reduce costs in order to maintain stable profits will restore numerous shipments to the rails, thus enabling railroads to increase their participation in the distribution of goods and materials. While the industry is presently considering mild rates hikes for the first time since 1960, its strongest competitors, the motor carriers, are calling for even larger increases to cover their new wage agreements.

"The position of the railroads over the longer term is an enviable one contrasted with that of the competition. Highway carriers, for example, are part of a 'unit-cost' industry. Each additional tractor-trailer compounds operating costs. As traffic rises, opportunities to stabilize labor expenses, the costs of fuel and supplies, highway tolls and possible future user charges, are virtually nil. The nation's highways, moreover, are already utilized at near optimum capacity.

"Problems similar to those of the truckers over the long term are also faced by the barge lines. While not restricted to the same extent in their ability to increase the size of a single consignment, their opportunities in relation to the railroads are quite limited."

Railroads, on the other hand, have competitive elasticity because of their basic technology: "The addition of one or ten or twenty new carloads of freight on a single train entails limited expense, thus providing the opportunity for substantial earnings once general operating costs and fixed charges are covered."

IC's gold mine in the sky

Illinois Central Industries' alert president, William B. Johnson, lost little time in spelling out the meaning of the Feb. 20 decision from the U.S. Supreme Court affirming that IC did, indeed, own the air over the railroad.

A few days after the decision (which ended litigation going back to 1958) Johnson announced the appointment of John N. Trissal as vice president, development, for IC industries, and let it be known that the gold in the air over IC was worth about $50 per IC Industries' share by the most conservative estimates. Trissal mildly noted that IC Industries is reviewing the former policy of selling air rights. "We are studying the merits of leasing air rights as well as participating in projects rising over Illinois Central property." Review may hardly be the word. Observers feel IC Industries, which has made few moves since it was organized, will participate heavily in what experts estimate will be a billion dollars worth of air rights construction over IC's tracks and land in Chicago.

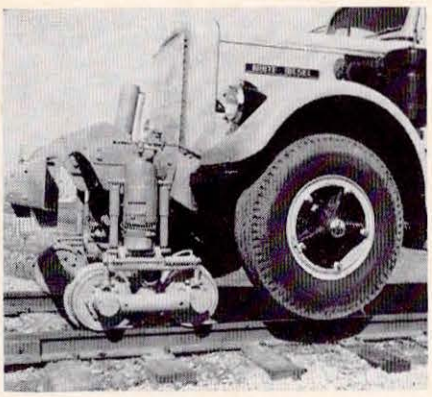
Alleghany must be dealt with

A victory at the U.S. Supreme Court over voting perogatives (see p. 36) of the 40,000 or so shares of Missouri Pacific Class B stock put some high cards in the hands of the Alleghany Corp.—and some high prices on Class B shares. The court, in effect, ruled that Class B shares should vote separately on MoPac merger plans: It amounts to veto power over any consolidation plans that Missouri Pacific's management and 1.8 million Class A shares may contemplate.

The ruling also strengthened the speculative worth of the Alleghany shares. Recent Missouri Pacific performance has pushed the value of the shares to dizzying levels. Estimates of per-share worth range from $1,700 to $6,500. Thus, the brick on MoPac's freedom of merger movement may be as low as $75 million or as high as $260 million.

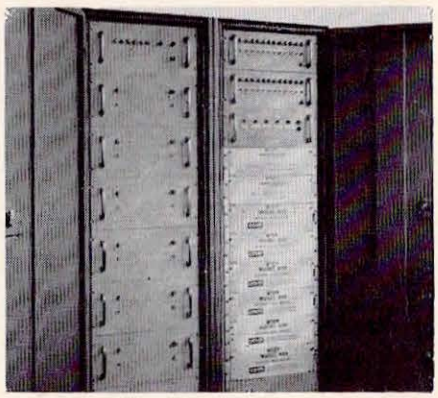
As a result of the ruling, Missouri Pacific is expected to withdraw its merger application for consolidation with Texas & Pacific. Negotiations between Alleghany and MoPac are imperative, say insiders. MoPac cannot move in any merger situation or even meaningfully engage in any conversation about merger with a threat of Class B veto hanging overhead.

NEW PRODUCTS REPORT



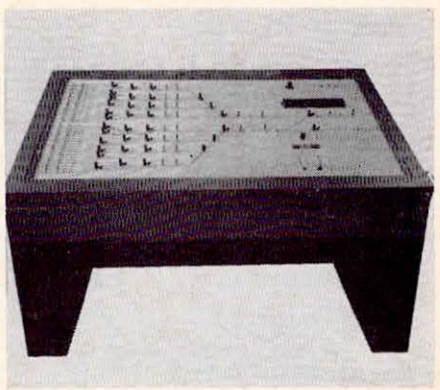
Hy-Rail Equipment (RA-1)

Now being offered to railroads is new extra-heavy-duty Hy-Rail equipment for two-axle trucks or cranes having a GVW of 25,000 to 37,000 lb, and three-axle trucks with a GVW of up to 45,000 lb. Each Hy-Rail assembly, front and rear, has four guide wheels that are raised and lowered hydraulically. Pictured here is the front unit in on-track position, and fitted with air-operated brakes that are available as extras. *Fairmont Railway Motors, Inc.*



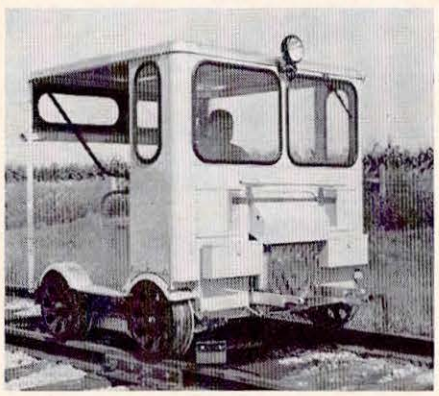
Sequential Selector (RA-2)

This automatic device completely controls a large number of retarders with only a few speed controls. This system helps make it economically feasible to install the ideal yard—a retarder on every class track. Only a few retarders will be in use at one time and a pool of 4 to 6 speed controls can handle a large number of tracks. The selector is part of a fail-safe system. Speed control selector failure will cause maximum retardation. *Abex Corp.*



Route Control System (RA-3)

This automatic memory route control system is designed for yards having more than 15 tracks and handling in excess of 750 cars per day. A ten-key push-button panel is provided for track selection. Track numbers appear in a small panel window as they are punched in. The machine lines switches sequentially for each route. Retarder control levers are provided for manual override. Levers control the release speed of group retarders. *Abex Corp.*



Track Motor Cars (RA-4)

Recently announced are two new models of track motor cars. The MT19 series A shown here is a one to four-man inspection car. It differs from other Fairmont inspection cars in that it is powered by a two-cylinder, four-cycle air-cooled engine having electric starting, a drive that includes a manual clutch and transmission with two speeds and reverse. The other car with the same engine and drive is the MT14 series L light section car. *Fairmont Railway Motors, Inc.*

Electric Switch Lamps (RA-5)

The WRSC electric switch lamps have been redesigned to include cast-aluminum housings, bases and base sockets. As a result the new Type 1880-A switch lamp and the new Type 1870-A now weigh 11½ lb and 10 lb, respectively, compared with 20 lb and 19 lb for the same units in cast iron. Both types are available for use with Air-Depolarized Primary batteries or with commercial current. *Western Railroad Supply Co.*

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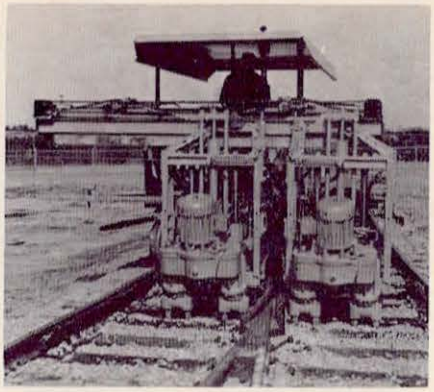
NEW PRODUCTS REPORT

Crossing Machine (RA-6)

A new machine, called the RMC Crossing Machine, combines a spot tamper and a tractor equipped with a backhoe. The unit was developed for digging out railroad crossings, and for doing the many material-handling jobs around a cross-repair job—such as handling rail, crossing timbers, ties, ballast—and for solidly tamping the track before the crossing is repaved.

Powered by a Ford diesel engine, the machine is an off-track unit that normally operates on four rubber-tired wheels. When tamping, it operates from steel rail wheels which are lowered hydraulically. Tamping, digging, loading and on-rail travel operations are hydraulic.

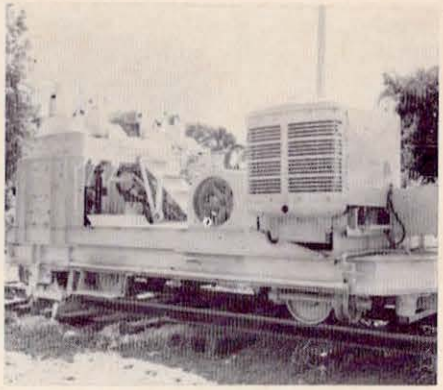
A special 7-inch cribbing bucket is used to crib track where necessary. A 15-foot backhoe with a 24-inch bucket is standard, with a smaller unit optional. The backhoe may be equipped with a special clamshell bucket to facilitate the handling of bulk materials and timbers. When not used for crossing work, the machine can be used as a spot tamper or for switch maintenance. *Railway Maintenance Corp.*



Switch Tamper (RA-7)

Based on experience with the Autojack Electromatic Tamper and the Junior Electromatic Tamper, a machine said to be capable of tamping the complete switch has been developed. The multi-purpose Switch Electromatic Tamper is said to have the advantage of being able to tamp a complete switch, turnout, crossover or ladder track with 16 tools and at production-tamper speed and tamping pattern.

When not being used as a switch tamper, the new Switch Electromatic Tamper can be used to do the same jobs as the Junior Electromatic Tamper, i.e., in a tie gang, for smoothing and spotting work, as a production tamper and as the second machine in a tandem-tamping operation. The Tamper can be supplied with a pivoting frame, permitting the unit to line the vibrators to the same degree as the turnout being tamped. Thus, it is said, 16 tools can penetrate the ballast simultaneously, at the same time squeezing the ballast beneath the tie so that the same tamping pattern results as when tamping a standard crosstie. *Tamper, Inc.*



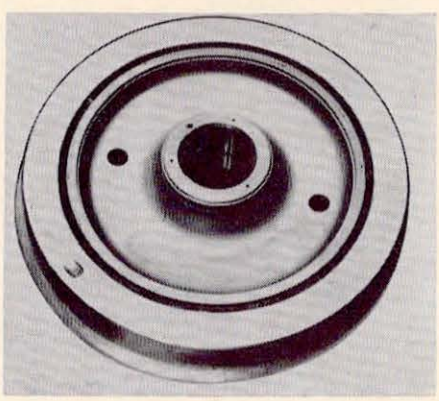
Power Track Ballaster (RA-8)

The production tamping machine known as the Power Track Ballaster has been improved in a number of important respects and has been re-introduced to the railroad market. Several hundred of these units were built and placed in service on the railroads by Pullman-Standard under a license agreement. An announcement by the manufacturer states that it has discontinued this license agreement and has arranged to take over all inventory and drawings, and will carry on directly the sale of the machines and parts and provide qualified service.

The improved model provides a split tamping head for tamping either or both rails, and an improved and simplified toggle-action tamping-shoe control. In addition, all the machine weight is now placed on tamped track. Practically all parts used in the previous machine, including the power plant and running gear, are in the new one plus the improved toggle-action control for the tamping shoes. Existing units can be readily converted to incorporate the improvements. *Power Ballaster Co.*

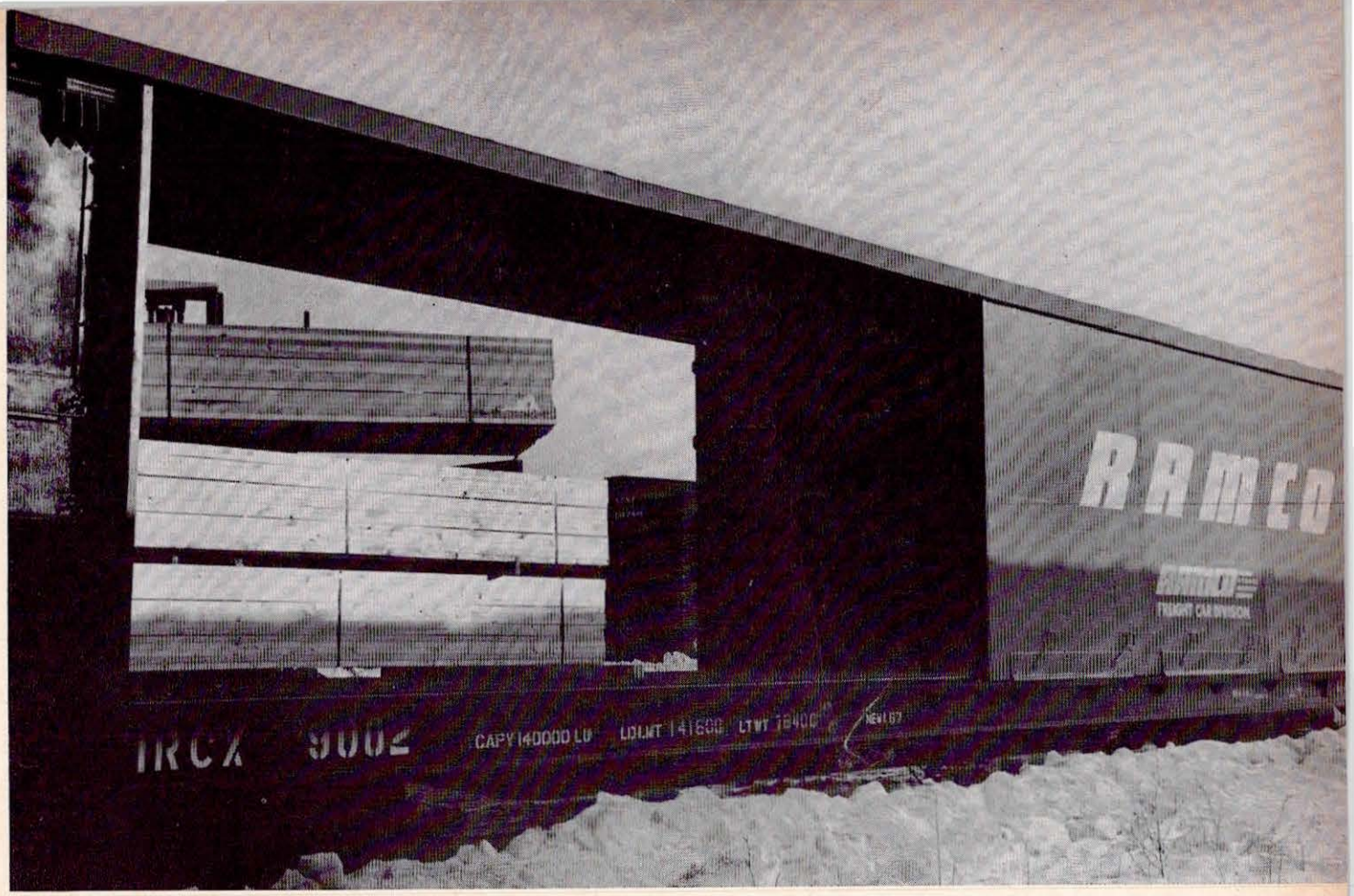
Floor Covering (RA-9)

Transit-Flor, a rubber flooring for transit vehicles has been updated to keep pace with modern design trends. The flooring is available in both smooth-surface and double-grooved rib design and comes in 18 colors—fourteen marbleized and three terrazzo patterns, plus solid black. It comes in rolls up to 38 inches wide. Step treads and entrance plates are available to match all 18 colors. Samples will be sent on request. *R.C.A. Rubber Co.*



Resilient Wheel (RA-10)

The Penn Cushion Wheel is the U.S. version of the "Bochum 54" rubber cushioned resilient wheel manufactured by Friedrich Krupp Huttenwerke. The wheel is designed for the transit industry. It is said to answer the problems of noise reduction, shock absorption, safe carriage of heavy weights, and high speeds. The U.S. licensee is an established producer of resilient wheels. It makes the PCC wheels used on street cars. *Penn Machine Co.*



UNOBSTRUCTED OPENING almost 25 feet long is provided in all-door car for forklift loading of lumber.

Loading costs drop as sides open wide

box cars following four years of experiments with prototype. McCloud River Railroad orders first 50 of new Ramco all-door

An all-door box car, designed to reduce materials handling costs in loading and unloading, has been introduced by Railway Automated Machinery Co. Simultaneously Ramco, a Chicago-based subsidiary of Nationwide Industries, Inc., announced the sale of fifty of the new all-door cars to the McCloud River Railroad at a cost of $1¼ million.

The cars of the California short line, a subsidiary of U.S. Plywood, will be built at Atlanta, Ga., by Southern Iron and Equipment Co. Delivery is to begin this month.

Flake Willis, McCloud River president, reports that his railroad had cooperated for over four years in conducting extensive tests of the all-door car under actual operation for more than 150,000 miles. "Savings of up to 80% have been realized in loading and unloading costs in use of the car.

• **Production line extension.** R. P. Underwood, Ramco's president called the car part of a new system, "a transportation material handling concept." He said, "The car is designed to meet industry specifications. Its applications are limitless for all kinds of packaged, cased or palletized goods. Production lines could be extended right into the car making it an extension of the whole distribution process."

• **Multiple openings.** The Ramco 50-foot, 70-ton all-door welded steel car contains 12 doors, six on each side. The six sliding, weather-tight doors allow 24 feet 10 inches unobstructed openings at four different positions on each side. The maximum door opening height is 9 feet 9 inches, while interior length is 49 feet 7¼-inches, and inside width is 9 feet 2½-inches. Flexibility for fastening lading is provided by 36 submerged tie-down anchors in the car floor. Car weight is approximately 75,000 pounds.

Underwood said the six sliding doors on each side "provide versatility unmatched in box car loading and unloading. The weather protection provided to lading is a feature of the car. In effect, the all-door car provides flat car loading with box car protection."

The car is somewhat similar to a prototype introduced by International Car, another subsidiary of Nationwide Industries, having eight 12-foot doors, four on each side. (RA, July 25, 1965, p. 22). The center support has been eliminated in the Ramco car, making possible maximum utilization of the interior. A special box-beam and shock absorbing end posts give roof support.

• **Diversified lading.** "The all-door car has attracted interest from shippers of such diversified products," Underwood said, "as food and other commodity packaged goods, carpet, linoleum and other floor products, pipe and conduit, extrusions, plastic products, wall board, aerospace components and frames, machinery, paper rolls, including finished lumber products demanding weather protection during transit. The car has possibilities for use in a circular route where deliveries could be made and returned or sent to other points with raw material." ■

WATCHING **WASHINGTON** WITH WALTER TAFT

TAFT

SOME RATE FREEDOM IS TOO MUCH—The ICC is considering advice that it should insist upon giving the railroads some rate-making freedom which several interested roads don't want. The advice came in a proposed report by Examiner Edward L. Boisseree on the Commission's proposal to end the absolute rate-break rule as a mandatory basis for charges on grain stopped in transit at various primary markets in the Western District.

The rule, in effect for more than 30 years, provides that combinations of local rates into transit points and proportional rates out shall be the exclusive basis of charges on transited grain—whether it has no alternative to using such combinations, or has the benefit of through rates with stopping-in-transit privileges. Without the rule, these through-rate transit balances could be used—and they are sometimes less than the proportionals. The Commission's proposal would not require abandonment of the 30-year-old rate floor, but its maintenance would be left to the discretion of the railroads.

BACK FROM THE COURTS—The Commission's first undertaking to impose that freedom was thwarted by the courts, upon the appeal of eight dissatisfied railroads and grain interests supporting them. The eight are the Santa Fe, Burlington, Milwaukee, Great Northern, Missouri Pacific, Northern Pacific, Soo and Union Pacific. One road, the Chicago & North Western, was satisfied and supported the Commission.

The case reached the United States Supreme Court, which upheld lower-court rulings to the effect that interested parties did not get due notice that abrogation of the manadatory rate-break rule was an issue in the proceeding out of which the abrogation order came in 1964. Commission findings then included a conclusion that the rule holds a rate umbrella over some grain-carrying railroads. Examiner Boisseree's report has come after further proceedings instituted by the Commission to comply with the Court's due-notice requirement.

GRAIN SCALES ALREADY ERODED—In advising the Commission to insist upon its proposal, the examiner notes how the traditional grain-rate structure is already eroded by limited-transit and multiple-car rates like Southern's "Big John" scale. Meanwhile, he found the "crucial issue" to be the "continued compulsion by the Commission of a particular rate adjustment which encourages rates and charges that are in part dictated by considerations that have no direct connection with the underlying service offered by the carrier."

The mandatory rule "runs contrary to the freedom to negotiate and establish rates to meet the needs of the shipping public," the examiner continues, adding: "A restriction on this freedom should be limited to those areas where it is necessary to foreclose the publication of unlawful rates and, even then, the restraints should be of limited duration." Nor does the examiner let it be forgotten that implementation of the Commission proposal would not alter a single rate—it would merely return to the railroads "the discretion to work out changes in grain rates that they, and their shippers, consider beneficial to the grain trade, the general public, and themselves."

SURPRISED?—In a 1964 speech, Commissioner Paul J. Tierney, the Commission's 1967 vice chairman, had something to say about railroad dissatisfaction with the original decision. Some might be very surprised, as he put it, that "certain railroads are not particularly desirous of a greater degree of freedom to exercise managerial discretion." The Commissioner then went on to suggest that "perhaps this merely serves to emphasize the complexity of transportation and its regulation, and a necessity for careful thought and planning in reaching resolutions to a multitude of problems attendant thereto."

Top Court rules on MoPac's vote plan

Decision gives Alleghany Corp. veto power over merger moves.

The United States Supreme Court last week gave Alleghany Corporation veto power over plans of the Missouri Pacific to merge with its subsidiary, the Texas & Pacific.

The Court held the MoPac's Class B stock, of which Alleghany owns more than 50%, is entitled to a separate vote on the merger plan. As submitted to the ICC, where it is still pending, the plan contemplates that the Class B and the Class A shares be voted as a single class. There are about 1,850,000 shares of Class A but only about 39,700 shares of Class B.

MoPac is expected to withdraw its application for merger with T & P as a result of the decision.

● **Voting plan only issue.** The Supreme Court's decision was embodied in an unanimous opinion by Justice Tom Clark. It was an 8-to-0 decision because one justice, Abe Fortas, did not participate. The voting plan was the only issue before the Court.

"We do not, of course, reach the merits of the proposed plan which is the concern of the Commission," the opinion said, adding: "Any reference to the effect of the plan is not to be construed as in any way passing upon its merit. With reference to voting rights, we hold that in a consolidation as proposed here Missouri law must be applied and that law requires the application of the Articles of Association of MoPac, which, in turn, require the assent of a majority of the shareholders on a separate class-vote basis."

A like ruling was made by a federal district court in Missouri to which Alleghany first appealed. MoPac's controlling stockholder, Mississippi River Corporation, won a reversal in the Court of Appeals for the Eighth Circuit. Alleghany then took the case to the Supreme Court.

● **$6,500 per share.** Alleghany got its Class B stock in exchange for old MoPac common when the railroad

emerged from reorganization on Jan. 1, 1955. The exchange ratio was one share of B for 20 shares of the old common. Holders of both classes have the usual voting rights, which means that the Class A holders control the railroad. The Class A has first call on earnings after prior obligations have been met, but it is limited to $5 per share as dividends in any one year, and it is non-cumulative. Its equity value remains at $100, but the equity of the Class B has grown to $6,500.

To reach its ruling that Missouri's law requiring separate votes should prevail, the Court relied on the Interstate Commerce Act's merger provisions. They give the ICC power to prescribe voting arrangements "unless a different vote is required under applicable state law." The Court's reference to MoPac's Articles of Association was the basis for its determination that, under circumstances of the merger proposal, the Class B does qulaify as a separate class. The articles have a provision which requires separate consent of Class A and B holders to "alter or change the preferences, qualifications, limitations, restrictions and special or relative rights of the Class A stock or the Class B stock."

● **Merger plan.** Alleghany's pleadings to the Supreme Court assailed the proposed merger's voting arrangement as a "plan concoted by the Class-A elected management" to transfer more than $200 million of the Class B's equity to the Class A stockholders.

The merger plan provides for an exchange of each MoPac share (without regard to class) for four shares of a new corporation, and for an exchange of one share of T&P stock (other than that owned by MoPac) on the basis of one share of T&P for 4.8 new shares.

The Circuit Court interpreted the applicable statutes as permitting the plan to be approved without class votes, provided it was approved by at least two-thirds of all outstanding shares. "We think not," the Supreme Court said, adding:

The National Transportation Policy and [the Act's merger provisions], rather than permitting the result the Court of Appeals has reached, require that 'the articles of incorporation shall control.' It follows that if a consolidation comes within the requirements of the articles of incorporation, the approval by separate vote of each class is required. The District Court found that the plan of consolidation did come within the articles of incorporation. It is clear that the Court of Appeals did not disturb this finding, although it is not precisely clear what the court found on the question. At one point, it appears to say that the articles 'seem to require' separate class voting, while it later assumes that they do so. Subsequently, the opinion notes that the court is 'not persuaded. . . that MoPac's articles call for a class vote on a consolidation. . . .'" ■

NYC industrial development work in '66 to have big payoff

New York Central expects to eventually add an estimated $41 million to its freight revenues as a result of the record-setting activity of its industrial development program last year.

The road estimates that 372 new and expanded projects were completed in 1966. They will provide local communities with 25,000 new jobs, $175 million in wages and salaries, $40 million in local utility services, and approximately $30 million in local taxes.

NYC President Alfred E. Perlman said the $41 million the Central expects to gain from the industrial development efforts will be realized when all of the projects are in operation. He said this can occur immediately with small installations but may take from 12 to 18 months for larger operations to reach top production. The $41 million figure would be the highest for any single year in Central's history.

The road is also looking abroad for industries that might be interested in locating along NYC lines. Perlman said that the road's experience in international traffic through its overseas Flexi-Van operations "assures us that many foreign industries are seeking to develop new markets and distribution outlets in this country."

A new color brochure describing NYC's industrial development program is being mailed to hundreds of leading companies here and overseas.

Perlman attributed the industrial development success to Central's ability to provide industry with the most modern transportation and distribution service and to a unique "systems approach" to industrial development.

He noted that the three major steel plants constructed during the past six years have all located along the Central's lines.

"Because Central is a major transportation company," he explained, "each of its many departments becomes a member of the industrial development team. We provide a total professional service." ■

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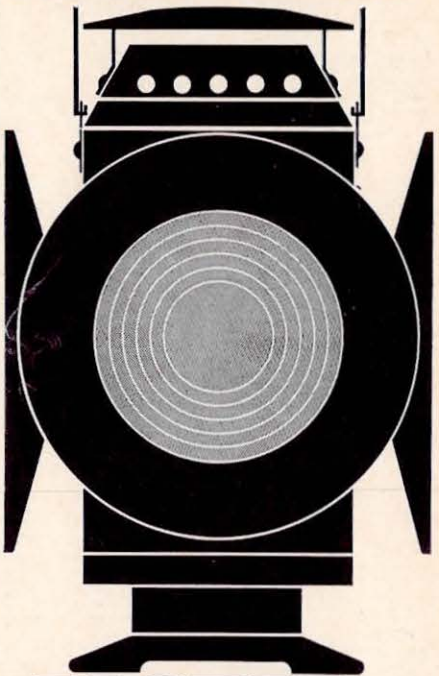

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New Haven

William A. Russell
New Haven

Paul H. Moore
NYC

Fred V. Schlaf
Portland Traction

PEOPLE IN THE NEWS

AKRON, CANTON & YOUNGSTOWN.—**John F. Colosetti** appointed auditor, Akron, Ohio. **John B. Larsen** named assistant auditor.

AMERICAN RAILROAD TRUCK LINES ASSN.—**J. W. Tipton,** vice president and general manager, **Frisco Transportation Co.,** Springfield, Mo., elected president of the association. **R. W. Dills,** assistant vice president, **Santa Fe Trail Transportation Co.,** Chicago, elected vice president; **C. T. Groton,** president, **Missouri Pacific Truck Lines, Inc.,** St. Louis, secretary-treasurer.

ATLANTIC COAST LINE.—Appointments at Jacksonville, Fla.: **N. S. DeMuth,** general manager rates; **John D. Taylor,** assistant general manager rates; **S. G. Williams,** manager rates; **G. M. Mann** and **J. E. Johnson,** managers rates; and **D. A. Boyette,** manager rates—TOFC. Mr. DeMuth was formerly general freight traffic manager. Messrs. Taylor, Mann and Johnson were assistant freight traffic managers. Mr. Williams was freight traffic manager and Mr. Boyette was general freight agent.

CANADIAN NATIONAL.—**Ivan Rochette,** assistant branch manager, Montreal Area, appointed customer service officer, express freight, St. Lawrence Region, Montreal.

A. Legault, planning officer, St. Lawrence Region, appointed industrial development officer, Champlain Area, Montreal, succeeding **M. Masse,** transferred to the Montreal Area, succeeding **G. D. Firlotte,** promoted.

CANADIAN PACIFIC.—**R. H. Smith** appointed supervisor—freight rates, New York.

M. C. Norris appointed transportation engineer, Montreal.

NEW HAVEN.—**George A. Clarke,** assistant vice president—mechanical, New Haven, Conn., retired after nearly 44 years of service. **Joseph J. Pfister,** assistant general mechanical superintendent, appointed general mechanical superintendent. **William A. Russell,** manager of mechanical facilities, named assistant general mechanical superintendent. **Ellis L. Hall** appointed assistant to general mechanical superintendent. Mr. Hall was formerly in charge of the staff and office supervision, mechanical department. **Horace J. Woodson,** supervisor of passenger equipment, promoted to assistant superintendent—car maintenance. **Frank A. Field,** project engineer, named industrial engineer.

NEW YORK CENTRAL.—**Paul H. Moore,** manager of marketing services, coal and ore department, appointed director of market research. He will be responsible for coordinating the market research program in major commodity areas, including autos, agriculture, metals, coal, chemicals, food, construction, paper and consumer goods. In addition, he will direct the marketing information systems program which provides control and analytical information. Mr. Moore was president, Transportation Research Forum of New York in 1966.

Laurence A. Bresee, assistant director of employee benefits, appointed manager of employee benefits.

PORTLAND TRACTION.—**Fred V. Schlaf,** traffic manager, Portland, Ore., advanced to superintendent and traffic manager, succeeding **P. A. Adams,** superintendent, retired.

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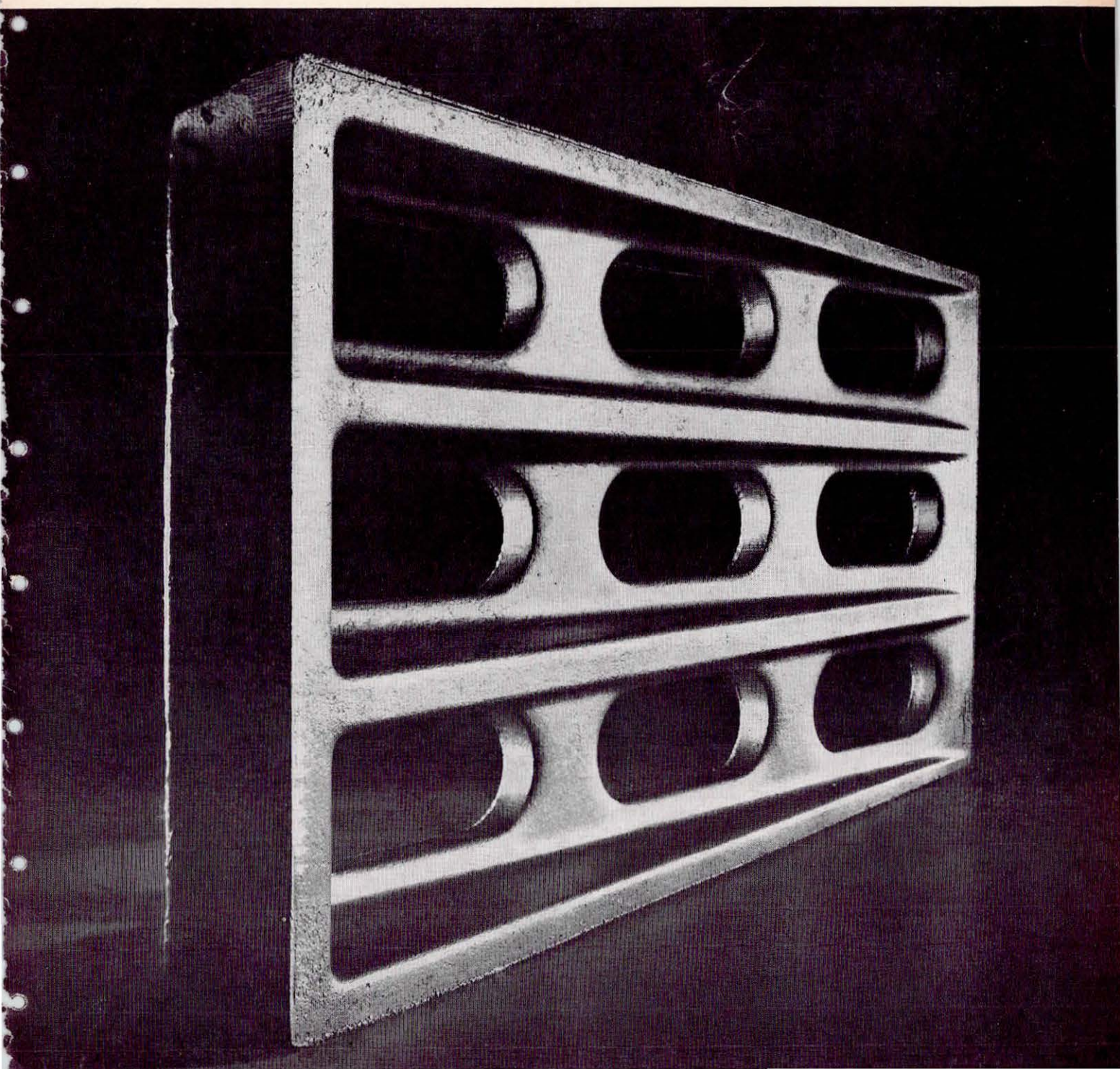

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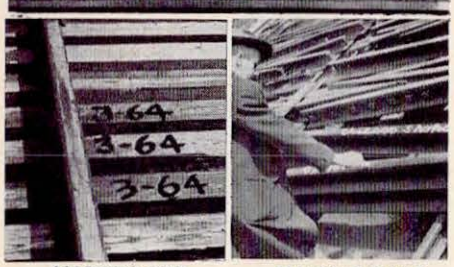

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SUPPLY TRADE

Plasser Railway Maintenance Corp. has changed its name to **Plasser American Corp.** The following appointments have been announced: **Kenneth Cavins,** vice president, Chicago; **B. G. Olthoff,** general manager and chief engineer, Rockford, Ill.; and **Josef W. Neuhofer,** sales manager, Chicago.

Under an expansion and building program, Plasser has doubled its manufacturing facilities at Rockford. Plans have been completed for a new factory and general office building at Belvidere, Ill.

Ralph E. Johnson has been appointed manager of engineering and manufacturing, **Poor & Co.,** Chicago (RA, Feb. 27, p. 60). Mr. Johnson was formerly manager of engineering and assistant to vice president of operations, Crane Co.

D. Joseph Corr, sales and service representative, Railway Products Division, **Poor & Co.,** Chicago, has been named manager of the San Francisco offices, effective Jan. 15.

Max J. Shearer, Jr., has been appointed transportation systems analyst, Management Systems Research Section, **Union Switch & Signal Division, Westinghouse Air Brake Co.,** Pittsburgh, Pa. Prior to joining US&S, Mr. Shearer was with the **New York Central.** Since Oct. 1965 he was assigned to the permanent merger group responsible for studying problems associated with the proposed New York Central-Pennsylvania merger.

E. C. Rathmann, district sales manager at St. Louis, Mo., **Magnus Metal Corp.,** subsidiary of **National Lead Co.,** has been appointed Eastern sales manager, New York. **R. J. Walker,** sales and service representative, Kansas City, has been transferred to St. Louis.

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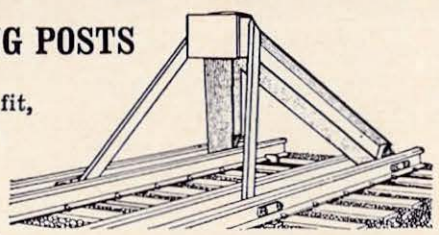

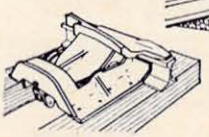

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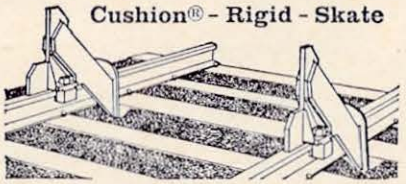

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Mexico City plans transit

(Continued from page 31)

the Zocalo (Cathedral Square, heart of the administrative and business district). The line continues south from here along the Calzada de Tlalpan to a point south of the District boundary, near the Aztec (Olympic) Stadium.

At the Zocalo, this line is bisected by the line beginning on the west at Chapultepec, continuing east along the fashionable thoroughfares Paseo de la Reforma and Avenida Juarez. East of the Zocalo, the line would continue out to the international airport.

A flat fare of one peso ($.12) will be charged, with transfer privileges. It is claimed that this fare will be completely cost-compensatory.

The system called for will be orthodox rapid transit, with stations about one-fifth of a mile apart, and in built-up downtown areas will be largely subway. Elsewhere, however, it's expected that much of the right of way will be at grade or elevated.

It's anticipated that once the concessionary contractor gets the system into operation, this firm will collaborate with the Servicios Electricos (the power utility) on running it.

- **French will aid.** Technical assistance for constructing the network will be French, but "fundamental" management and supervision will be in the hands of Mexican technicians.

The downtown bus system will be reshaped in accordance with the new traffic patterns created, and new bus vehicles will be ordered, in order to cope with the immediate problem.

At a later date, a number of lines now in the planning stage will be phased in. Most important are a second north-south line and a number of spurs linking the basic system with built-up and industrial districts on the periphery of the District.

- **Why it's important.** The municipal leadership left no doubt of its willingness to tackle the project. Aside from the question of the thousands of visitors due for the Games next year, the Mayor called rapid transit a "must" on the grounds of both esthetics and economics.

One municipal staff official estimated that downtown automobile traffic is now averaging no more than 12 mph. He added that if each man-hour of production averages a fraction under five pesos, the number of man-hours of production lost due to traffic congestion equals eight million pesos a day. ■

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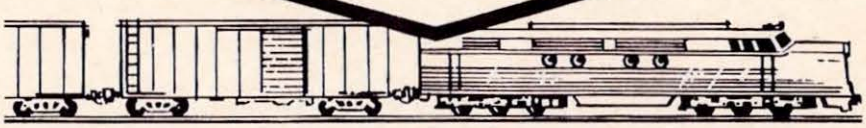
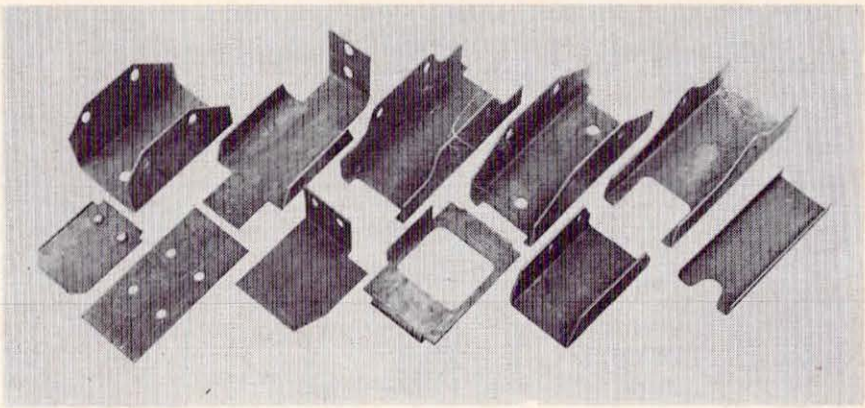
WEAR PLATES





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Extensive road service experience on many railroads affords convincing proof of the superiority of ROL-MAN prehardened manganese steel pedestal and journal box wear plates. They outlast the best of all other materials by a wide margin on all types of locomotives and cars. A work-hardening steel, ROL-MAN has the greatest resistance to severe wear and heavy impact of any known steel. THE HARDER IT WORKS—THE HARDER IT GETS! It continuously work-hardens under impact to a surface hardness of 65 Rockwell C without any loss of strength or toughness. Fewer replacements, reduced maintenance costs and increased protection of adjacent truck components are important benefits of using ROL-MAN prehardened wear plates. All shapes and sizes can be furnished to your specifications for existing or new locomotives and cars. Send drawings or description for quotations on your requirements.

Send for illustrated technical bulletin of ROL-MAN wear parts for cars and locomotives.

MANGANESE STEEL FORGE CO.

Richmond St. & Castor Ave.
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ROL-MAN

Circle 12 on reader service card

Why this wheel climbs the rail

(Continued from page 23)

roll action, but not enough to cause wheel lift or flange climbing.

Next, the twenty joints were shimmed to be three-quarter inch out of the general cross level. Here at a critical speed of 12 to 18 mph a pronounced roll effect was induced and there was wheel lifting, but the wheel flanges did not climb the rail. The motion pictures showed that when the car rolled badly inward towards the low rail, causing the wheel to lift from the high rail, the wheel flange stayed inside of the rail gage throughout the period that it was off the rail.

● **Wheel lifting induced.** The elevation of the curve was then increased to 6 inches and the same procedure repeated as described for the 3-inch elevation. With the rail shimmed for the joints to be three-quarter inch out of the general cross-level a pronounced roll action with wheel lifting was again induced at critical speed. However, at two locations the flange climbed the high rail and ran along on it for over a rail length before dropping back inside. The climbing occurred just a foot or so before the wheel reached a joint in the high rail.

The movies showed that at most joints when the wheel lifted, the flange would come down inside the high rail but at the two joints it climbed on top of it. In some later tests with other cars, wheels were observed to climb the high rail shortly after entering the shimmed section and to stay on it all the way around. Some cars were bad actors and wore a flat surface on the flanges from being up on the high rail so much during the tests. It was also interesting to note in the movies that sometimes the flange appeared to climb up on the high rail and sometimes it lifted clear of the rail and came down on top of it.

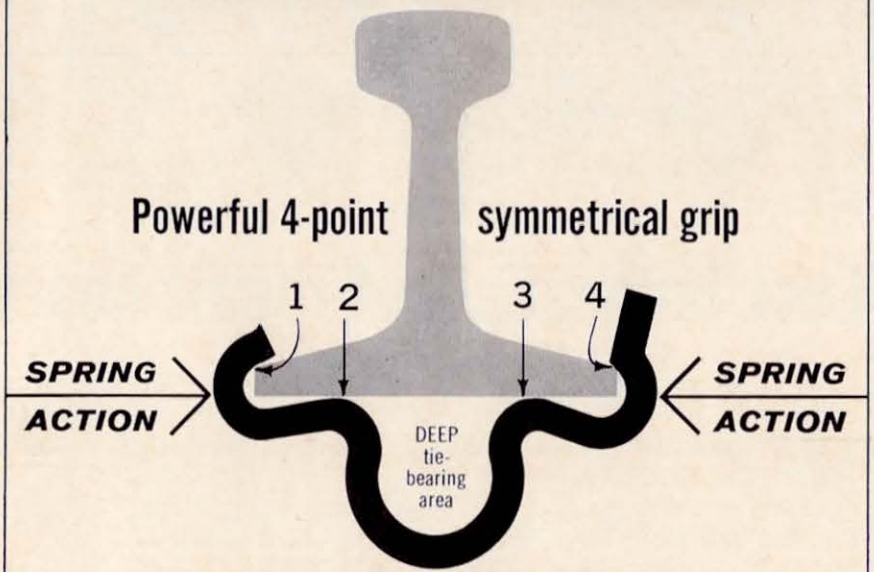
Tests were also made with an irregularity in alignment within the shimmed section. No noticeable effect on derailing was found from this condition. However, it should not be concluded that irregularity in alignment may not contribute to derailment potential.

● **What causes derailing.** From the standpoint of track conditions, the tests did indicate that a low joint condition at successive joints of three-quarter inch or more could produce derailing of the wheels on the high rail of a sharp curve at the critical speed. Also, it appeared that derailment is more likely to occur with 6-inch elevation than with 3-inch elevation.

A few instances have been reported of derailment of 100-ton hopper cars at speeds of about 45 mph on curves of 4 to 6 degrees. No condition of track or equipment could be found to offer a satisfactory explanation of the cause for the derailment. In tests made with 100-ton hopper cars, they have run remarkably smoothly at speeds from 20 to over 50 mph. No tests have been made by the Research Center on these cars at higher speeds.

In conclusion, the Research Center will welcome any inquiries regarding tracking problems with the newer types of equipment. A background of experience is thus afforded which may be helpful to other roads and indicate where improvements can be made in track conditions or equipment. In certain circumstances, the Research Center may be able to cooperate in a study of tracking problems as a part of its research activities sponsored by the Joint Committee on Relation Between Track and Equipment. ■

Woodings Rail Anchors have MORE RESERVE POWER than you ever need!



The powerful spring compression grip of the Woodings Rail Anchor is backed up by wide and deep tie-bearing area. Together they give the Woodings Anchor its extra reserve power, enable it to hold fast under the most severe conditions. High reapplication value, excellent for machine application, best for welded rail.

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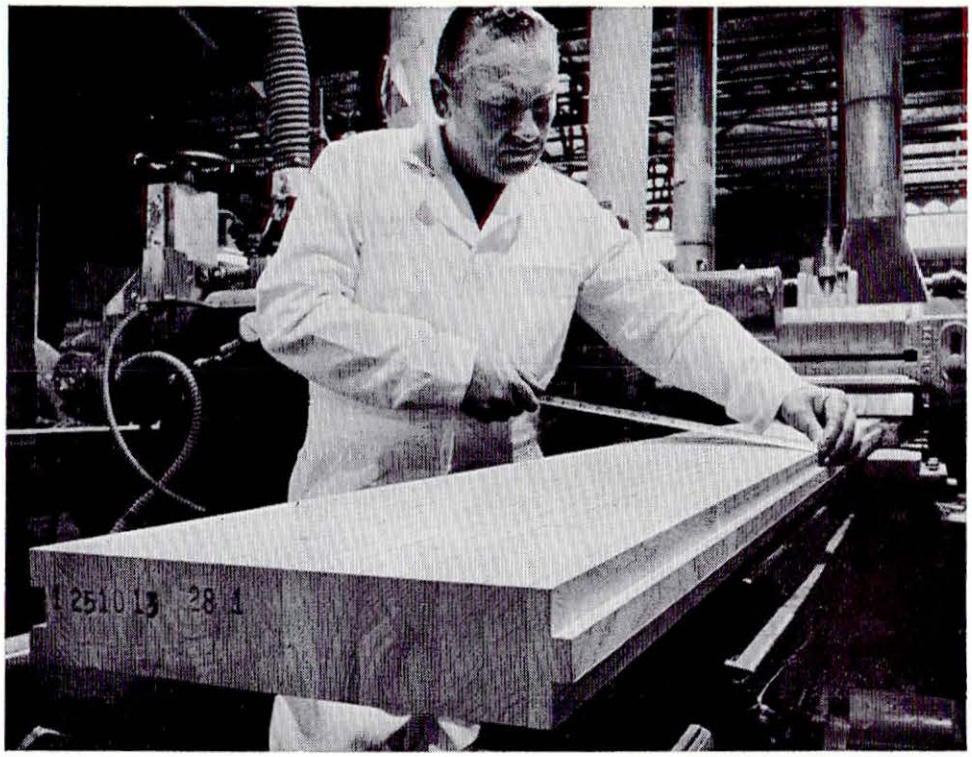

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Customer Test: Used successfully for years by leading Class I railroads with never a failure.

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THE FAIRMONT W23-C

This Fairmont ballast car is a glutton for punishment.

You can work it all day plowing ballast. Then, when it's through, put it to work scarifying ballast. And then discing ballast. And blading ballast, and equalizing and dressing ballast. It handles all of these tough jobs . . . without hesitation.

And after you've finished these chores, the W23-C even sweeps up after itself.

This ballast maintenance car gives you nine speeds in either direction . . . from ½ to 10 mph for work. And up to 25 mph for deadheading.

But the work our W23-C does isn't the only reason to select it. The other is the company that makes it.

Here at Fairmont, we don't settle for just selling you a machine. We sell "profitable" maintenance-of-way . . . like the W23-C, that cuts maintenance costs by doing six different jobs. So it's no wonder that Fairmont has been first in maintenance-of-way. . . right from the first.

Fairmont equipment is also available for lease. For more information, write or call us.

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Fairmont

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Once down the tracks and you're on top of vegetation control problems. For really tough spots, there's TORDON® 10K Pellets herbicide. Kills most any woody plant, including maple, conifers, locust and sassafras. One application gives control lasting as long as three years. A handful takes care of 30 square feet of even the toughest brush. Economical, because you can select the precise areas that need this powerful treatment.

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Together, these Dow herbicides give you a low-cost program that saves money, time and labor. You get positive control over undesired vegetation, clear up your rights-of-way, keep them that way for less and less cost as time goes by. Write for complete details. Right away. The Dow Chemical Company, Agricultural & Industrial Bio-products Sales, Midland, Mich. 48640.

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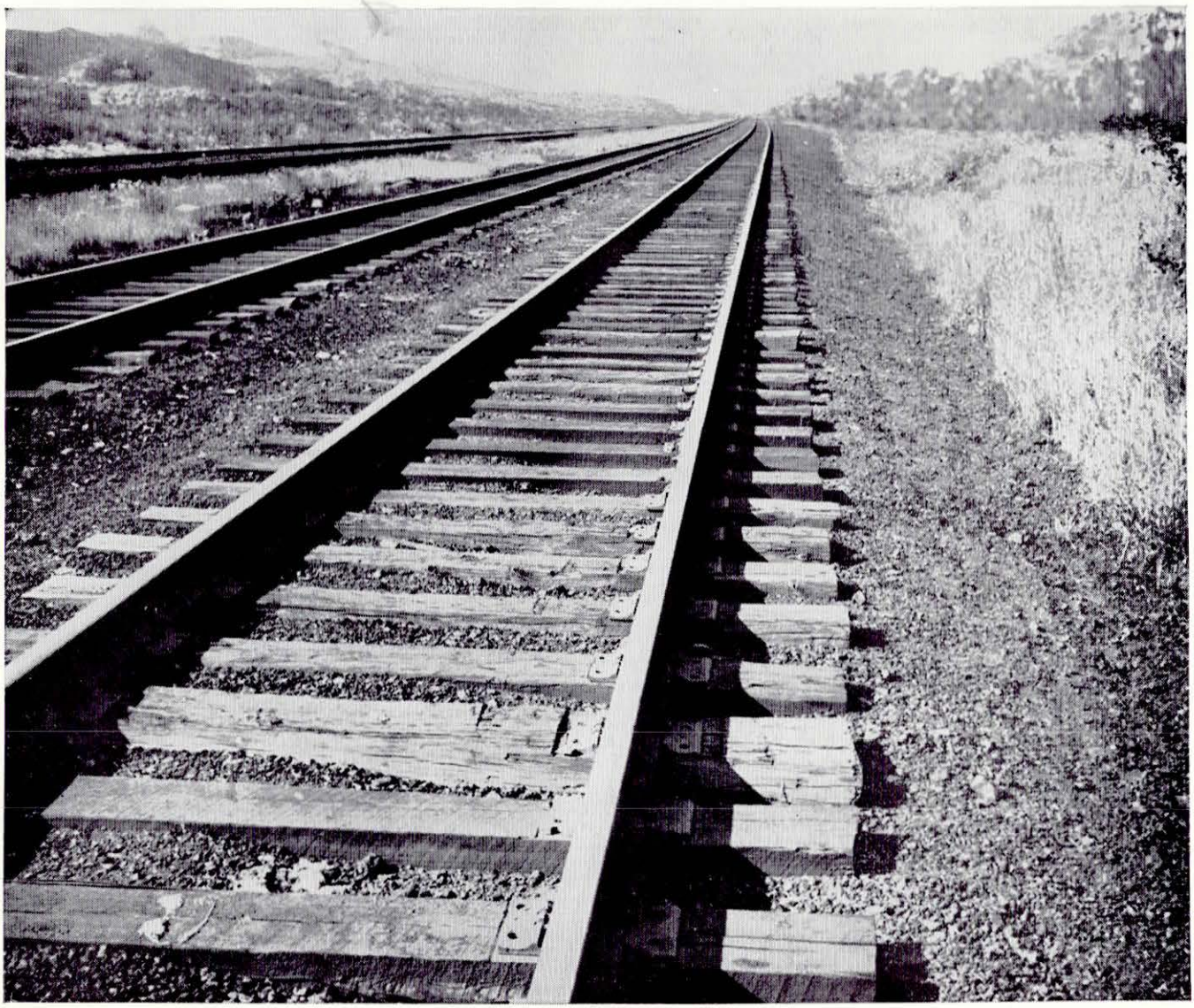
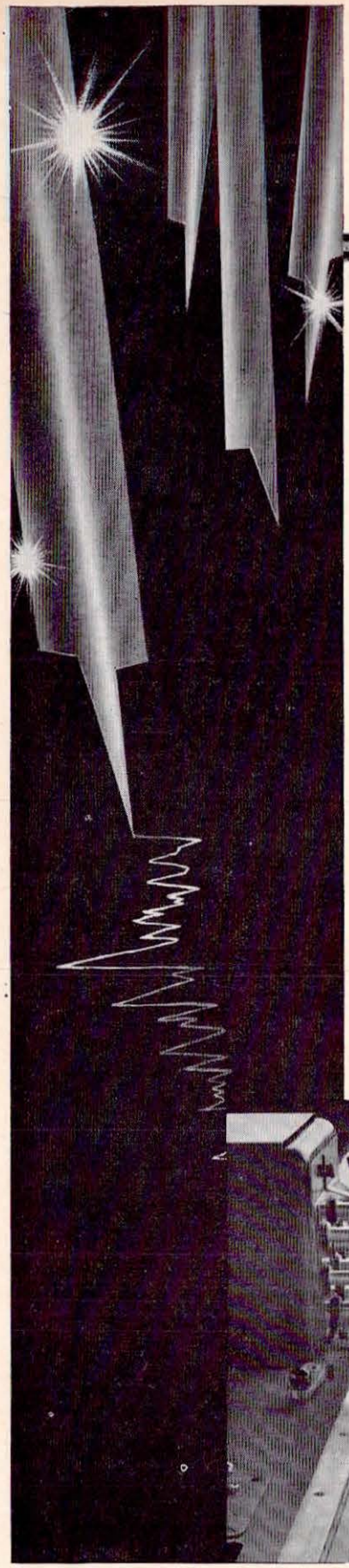


DOW

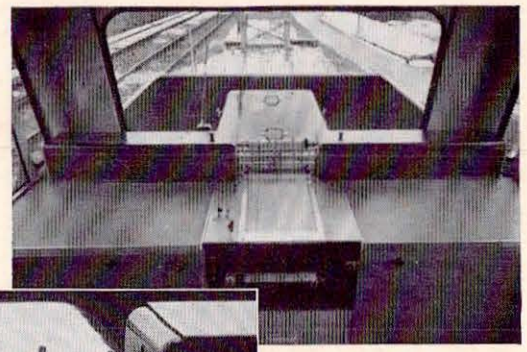
Circle 27 on reader service card

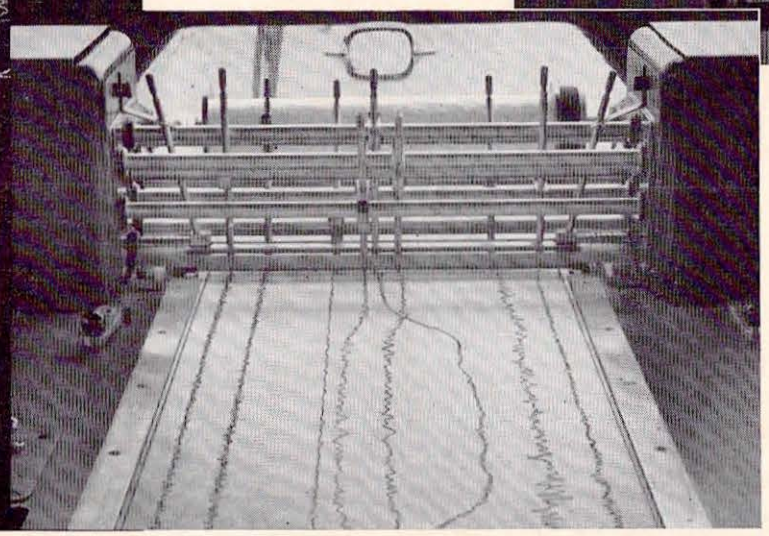


the track inspection car that DETECTS LOCATES and RECORDS track defects

MATISA

TRACKFAX CAR





No more track improvement programs by "guesstimate!" A technical basis for plans and expenditures . . . a factual *recording* of track conditions . . . a permanent comparative record to justify expenditure.

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What does that mean?

It means you can sharply reduce the amount of drift from herbicide sprays!

How is VISTIK used?

Following label recommendations, for 100 gallons of spray mix you would use Vistik in these amounts:

3.5 lbs.—for mist-blower applications.
4.5 lbs.—for handgun applications.
6.0 lbs.—for helicopter applications.
6.5 lbs.—for air carry sprayers.

How much time does it take to mix VISTIK?

About ten minutes!

Will I need costly equipment and special gadgets?

No!

Is VISTIK expensive?

No! It is the least expensive thickening agent.

Can I see a VISTIK demonstration?

Yes! A Hercules technical representative will be happy to show you an 11-minute color and sound movie which shows VISTIK being sprayed by helicopter, by handgun, and by truck. He can also arrange to run a field trial for you whenever you desire.

Any more questions?

HERCULES

Cellulose & Protein Products Department, Hercules Incorporated, Wilmington, Delaware 19899

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A Standing Rule Safe, Rubber Transit-Flor

Entering, leaving or standing, passengers are safer on resilient rubber flooring . . . and Transit-Flor is the leader. Sure footing, eye appeal and durability with only scant maintenance have made Transit-Flor a standing rule with major transit companies.

Smooth surface and ribbed designs are available in marbleized and terrazzo patterns color-coordinated for original or existing equipment. Rubber flooring is manufactured in rolls up to 38 inches wide and 25 yards long, or in 9″ x 9″ tiles.

Transit-Treads Rubber treads assure maximum safety and wear on steps and threshold areas, and they are color-coordinated with Transit-Flor. Optional white or yellow safety nosing is an integral part of the tread.

Test a free sample, write:

THE R.C.A. RUBBER COMPANY
An Ohio Corp. of Akron, Ohio
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Here's the key to simpler, stronger car door hanging patented by EDWARDS

You can't even see it up there at the top edge of the door without removing the rubber nosing.* But just extract this movable wedge by withdrawing the screw and you can remove the whole door in a matter of minutes!

By tightening the screw, this movable wedge is driven in toward a fixed wedge at the other end of Edwards patented door-hanging arrangement. This forces door and hanger connections into a *structural* locking engagement . . . far superior to conventional assemblies with multiple screws that can loosen, bend or break under stress.

Result: long, trouble-free service; plus quick and easy maintenance when needed. This is creative engineering design by Edwards . . . now implementing new concepts in operating efficiency on transit systems in New York, PATH, Boston and Philadelphia and also on San Francisco's BARTD test track model as well as the prototype Pittsburgh Transit Expressway vehicles.

**Rubber nosing is easily removed for maintenance by activating release latch in face of door with special tool. This also exposes housing for screw and wedge at top of door for simple removal of entire door.*

THE O. M. EDWARDS CO., INC.
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Freight and Passenger Car Charts

These charts are very helpful to AAR billing clerks, mechanical engineers, purchasing and stores personnel, car inspectors, write-up men, car foremen, and anyone else who needs a knowledge of car parts and their relation to each other.

The charts include a cutaway diagram of the car and a listing of important parts with arrows showing where each is located. These charts are a part of standard training programs used on a number of major railroads.

$2 each

$10 for any six

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if you return the charts to us within 30 days

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- ☐ Covered hopper car (22x30 inches)
- ☐ Box car, AAR standard **(23x25 inches)**
- ☐ **Air conditioned chair car, 1930 design** (18 x 29 inches)
- ☐ Tank Car (23 x 35 inches)
- ☐ **Refrigerator Car, wood sheathed, steel** underframe, 1920 design (16 x 22 inches)

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Canadian railroads adopt "total transport" concept

Canada's two giant railroads are emerging from a "conceptual revolution" that has recast them as complete transportation systems ready to meet the changing needs of the shipper.

This is the appraisal of C. C. Watson, system manager of Canadian Pacific's Freight Sales Department. CP and Canadian National, he said, "are no longer just railways. They are transportation systems."

He said that CP, for example, while long a diversified company, diversified even more in recent years building up its airlines, adding trucking services, piggyback, merchandise services and now containerization.

"Today, Canadian Pacific is a complete transportation system, able and ready to meet any of its customers' transport needs. And, more important, ready to meet their changing needs. Canadian National can, I am sure, make the same claim," Watson added.

Improved rail operations

Railway performance in Canada has made some spectacular gains in recent years, he said.

"We have shippers who are so confident about the regularity and dependability of our freight service that they will advertise retail goods for sale for a specific day—knowing that the goods are on the way by train and will arrive in time. This car-to-counter approach means costs-savings by eliminating the extra handling costs in warehousing the goods. It is an approach based on experience, and experience based on performance by the railway."

He said CP's new freight-car tracing service which begins operation this month will provide instant answers to customers' queries about the location of their shipments.

Under the new system, car tracing offices in five cities—Vancouver, Calgary, Winnipeg, Toronto and Montreal—will be able to communicate by teletype with one of the three advanced computers in Montreal. The computer will be able to search its memory and pick out a specific box car and its location from CP's inventory of more than 80,000 freight cars.

Watson said that under the new National Transportation Act, passed by Parliament earlier this month, the railways will have greater freedom to use their pricing policies to meet competition.

"This freedom comes after eight years during which a substantial part of railway revenues was frozen through inability to increase rates," he stated.

"Both railways have welcomed the new law for transportation but we must wait before its various parts become fully effective and the regulations of the new Canadian Transport Commission are known.

"Under the new law and its philosophy of competition, we will be able to market transportation more efficiently and effectively. We intend to do just that—to set our prices, design our facilities and operate our services to meet the specific and ever-changing needs of our customers."

He said that from a railway viewpoint, "we need volume and regularity of shipments. We want to even out the costly unbalanced movement of traffic and to minimize the problem of seasonable peaking of traffic. Our pricing policy will be aimed at achieving these goals." ■

DIFFERENTIAL AIR DUMP CARS

CARRY MORE - WEIGH LESS!

MAINTENANCE OF WAY . . . ideal for ditching, rip-rapping, widening banks, and power shovel work.

REVENUE SERVICE . . . fast economical bulk handling for unit train or fast turn-around applications.

8-second dumping — all-welded construction — sizes to 70 cu. yds.

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MARKET OUTLOOK

Carloadings

Loadings of revenue freight in the week ended Feb. 25 totaled 504,271 cars, the Association of American Railroads announced on March 2. This was a decrease of 26,400 cars, or 5.0%, compared with the previous week; a decrease of 31,732 cars, or 5.9%, compared with the corresponding week last year; and a decrease of 418 cars, or 0.1%, compared with the equivalent 1965 week. Ton-miles generated by carloadings in the week ended Feb. 25 are estimated at 13.4 billion, a decrease of 1.7% below the corresponding week of 1966, but an increase of 11.8% above the 1965 week.

REVENUE FREIGHT CARLOADINGS

For the week ended Saturday, Feb. 25

District	1967	1966	1965
Eastern, including Allegheny and Pocahontas ..	201,004	222,517	211,932
Southern	111,235	109,981	104,378
Total Eastern and Southern Districts	312,239	332,498	316,310
Northwestern ..	54,702	59,148	55,274
Central Western	100,823	106,297	99,272
Southwestern ..	36,507	38,060	33,833
Total Western Districts	192,032	203,505	188,379
Total All Roads	504,271	536,003	504,689
Commodities:			
Grain and Grain Products	46,320	55,417	42,376
Livestock	1,197	1,385	1,846
Coal	106,908	110,086	100,046
Coke	6,989	8,644	8,377
Forest Products	38,714	38,581	36,685
Ore	16,037	18,454	18,219
Merchandise l.c.l.	5,203	5,906	9,091
Miscellaneous ..	282,903	297,530	288,049
Feb. 25	504,271	536,003	504,689
Feb. 18	530,671	537,702	529,594
Feb. 11	499,811	534,350	512,582
Feb. 4	519,679	487,617	501,186
Jan. 28	526,637	513,503	527,826
Cumulative total, 8 weeks	4,102,983	4,198,400	4,162,048
Estimated revenue ton-miles (billions) 8 weeks	108.2	106.9	98.8

PIGGYBACK CARLOADINGS.—U.S. piggyback loadings for the week ended Feb. 18 totaled 23,178 cars, carrying 38,264 trailers, compared with 21,671 cars, carrying 35,464 trailers, in the corresponding 1966 week. Loadings for 1967 up to Feb. 18 totaled 147,961 cars, carrying 239,764 trailers compared with 139,791 cars, carrying 229,240 trailers, in the corresponding period of 1966.

IN CANADA—Carloadings for the seven-day period ended Feb. 14 totaled 69,087 cars, compared with 69,606 for the previous seven-day period, according to the Dominion Bureau of Statistics.

	Revenue Cars Loaded	Total Cars Rec'd from Connections
Totals for Canada		
Feb. 14, 1967	69,087	26,188
Feb. 14, 1966	76,231	27,856
Cumulative Totals		
Feb. 14, 1967	440,765	154,860
Feb. 14, 1966	445,182	155,455

FREIGHT TRAIN CARS

► *McCloud River.*—Purchased 50 50-ft, 70-ton all-door welded steel cars from Railway Automated Machinery Co. at a cost of $1,250,000. The cars will be built at Atlanta, Ga., by Southern Iron and Equipment Co. Delivery will begin this month. The cars have 12 sliding doors, six on each side, allowing 24-ft 10-inch unobstructed openings at four different positions on each side. The all-door cars were designed to reduce materials handling costs in loading and unloading (see p. 35).

NEW FACILITIES

► *Canadian National.*—Plans installation of four new hot box detectors purchased from Servo Corp., on the line between Kamloops and Port Mann, B.C. and on the heavily-traveled Montreal-Toronto line. Fifteen detectors were installed on the CN system late last year. Eight were placed on the main line between Biggar, Sask., and Jaspar, Alta., while the other seven were located on the Great Slave Lake Railway from Roma, Alta., to Pine Point, N.W.T. The installations are part of CN's continuing protection program that has reduced hot boxes from 10,000 in 1957 to 950 in 1965.

► *Canadian Pacific.*—Projects beginning in 1967 include construction of a one-spot car-repair facility at St. Luc Yard, Montreal, $1,687,000; and construction of a new ferry slip at Vancouver, B.C., $597,000. Projects begun earlier which will be continued through 1967 include installation of CTC on the Calgary, Revelstoke and Canyon Divisions, $3,746,000; installation of CTC and extension of sidings on the Schreiber Division, $2,271,000; construction of a new freight terminal for Tormon Assembly Agency Ltd. at Outremont, Que., $2,686,000; construction of car-cleaning and one-spot car-repair facilities at Coquitlam, B.C., $574,000; construction of automobile compound facilities near St. Luc Yard, Wentworth, Que., $372,000; and installation of CTC on the Winchester Subdivision, $320,000.

► *Chicago & North Western.*—Will extend its microwave network 100 miles between West Chicago, Ill., and Clinton, Iowa.

► *Northeast Corridor.*—Budd Co. has placed an order with Union Switch & Signal division of WABCO for 61 sets of cab signaling and speed control equipment on self-propelled cars for use on the project. A previous order was placed by Budd for four sets of cab signaling and automatic train stop equipment for installation on test cars in the Corridor program.

FOREIGN

► *Republic of Korea.*—Placed orders with General Motors Overseas for an additional 62 diesel-electric locomotives. Included are 40 SDP-38 1,800-hp and 22 G-22 1,310-hp units. The order, valued at $15.5 million, is financed by a loan negotiated by the Korean government through the Agency for International Development. Scheduled for mid-1967 delivery, the new diesels will be used in both passenger and freight service. They will join a fleet of 141 other General Motors locomotives previously delivered to Korea.

YOU OUGHT TO KNOW

Prices up: Prices paid by railroads for fuel, materials and supplies continued increasing in last year's fourth quarter. The AAR's index for Jan. 1, 1967, was 105.7, up less than a point from Oct. 1, 1966's 104.9, but 3.5 points above January 1966's 102.2. The indexes are based on 1957-1959 averages as 100. All of the index's group indices were up from October, the largest increase among them having been the 1.3-rise in the miscellaneous products group.

D.O.T. in business April 1: The Cabinet-level Department of Transportation headed by Secretary Alan Boyd will be in business April 1. Boyd has announced that President Johnson will issue an executive order making that date the one on which the new Department will go "into full, formal operation." The Act creating D.O.T. provides for its activation 90 days after the Secretary takes office—"or such earlier date as the President shall prescribe." So, the activation date could not be later than April 16, Boyd having taken his oath Jan. 16.

Channel Tunnel: One step closer—The governments of Britain and France formally invited bids from private firms around the world to join in financing and construction of the long-awaited Channel Tunnel. The tunnel will be 20 miles long, two-tracked, equipped for automobile haulage, and cost is estimated at $500-600 million. The Channel Tunnel Study Group prepared the studies upon which the two governments are acting. Interested firms should contact either of the two governments' Ministry of Public Works by April 15.

No barges—yet: Frisco Transportation Co. is asking dismissal of its application for authority to operate a barge line on the Arkansas-Verdigris River and other waterways. Reason: The system won't be completed to Tulsa, Okla., for about three years, and Frisco has decided not to prosecute its petition at this time. The application was filed in 1965.

Budd elevates Sichert: The Budd Company last week announced the appointment of Paul O. Sichert as corporate manager of advertising and market development. Sichert will be responsible for market research and public relations as well as advertising and market development. He joined Budd 10 years ago as a supervisor in the market research department.

New container plant: Clark Equipment's Brown Trailer Division announced ground will be broken this spring on a 55-acre site near Scranton, Pa., for construction of a 225,000-sq ft plant, to manufacture containers. Production is due to begin in September.

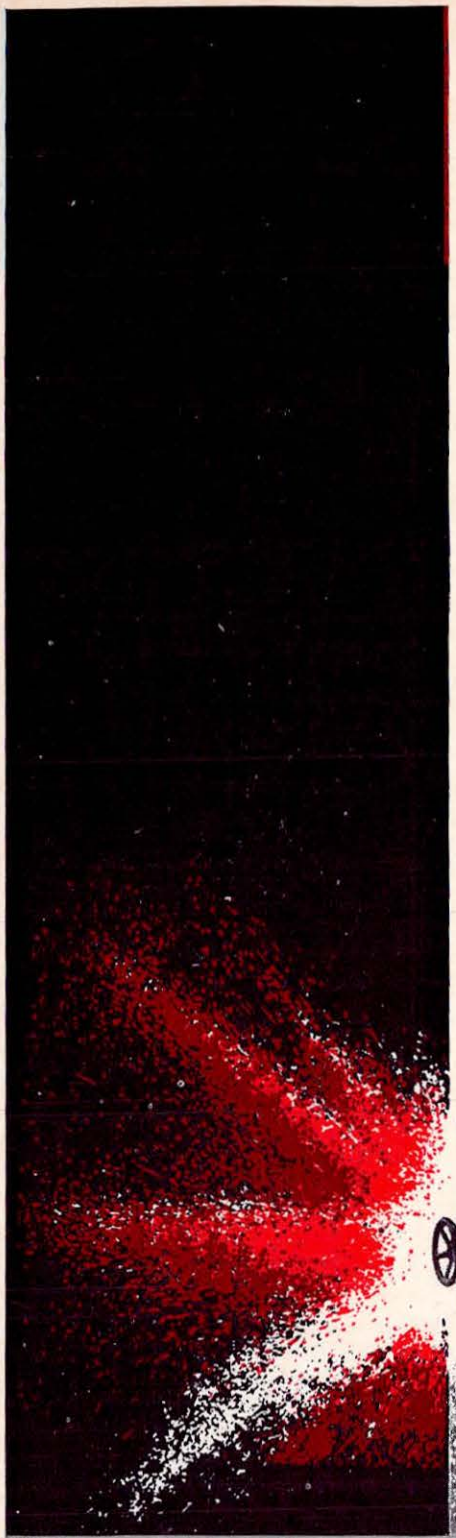
Commerce names Saunders: Stuart T. Saunders, chairman of the board of the Pennsylvania, has been named chairman of the Balance of Payments Advisory Committe of the U.S. Department of Commerce. Saunders succeeds Albert L. Nickerson, chairman of Socony Mobil Oil, who has served as chairman of the committee since it was created in February 1965 to advise the Secretary of Commerce on the program of voluntary cooperation by the business community to improve the U.S. balance of payments.

Newton Morton dies: The railroads have lost a longtime champion in the academic world. Newton Morton, associate professor of marketing at Kent State University, Kent, Ohio, died Feb. 20 in an Akron, Ohio, hospital. Morton's special interest was railroad rates, and he was the author of a number of articles on rate-making published by Railway Age. He was also a frequent contributor to the "Letters" column of this magazine. A founder of the American Society of Traffic and Transportation, Morton was a registered Interstate Commerce Commission practitioner.

Truck tonnage: Intercity truck tonnage in the week ended Feb. 18 was 6.5% above that of the previous week, but 1.6% below the volume in the corresponding week of 1966, according to American Trucking Associations.

Current statistics

Net Income	
12 mos., 1966	$902,000,000
12 mos., 1965	815,000,000
Carloadings, revenue freight	
8 wks., 1967	4,102,983
8 wks., 1966	4,198,400
Freight cars on order	
Feb. 1, 1967	51,450
Feb. 1, 1966	45,754
Freight cars delivered	
1 mo., 1967	7,217
1 mo., 1966	7,724
Serviceable cars	
Feb. 1, 1967	1,421,406
Feb. 1, 1966	1,400,413



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LUTHER MILLER

AS THE EDITOR SEES IT...

IT CAN'T HAPPEN HERE . . . —Who ever heard of a railroad with 17 presidents in 11 years? That's the proud record of Railroad X. Who knows of a major railway system with a freight-car bad order ratio of 35%, and with over a third of its 1,100 diesels out of service for lack of spare parts; a railroad that grinds along on an operating ratio of 250%—whose annual operating loss, indeed, is equal to the federal government's annual deficit? That's Railroad X to a T.

Management? Three years ago the incumbent president of Railroad X announced that he was going to scrap or sell all of his diesels and go back to steam power. Furthermore, he added, all coal- and oil-burning steam locomotives would have to be converted to wood-burners because the country's forest industry was in a slump and needed help.

All of this is the more sad because just 20 years ago Railroad X was one of the world's showcase transportation systems. People came from far and near to admire and study its operations. It made money in the worst of times.

Then came the revolution—and government took over. Railroad X would henceforth be used as a "tool of the national economy." Rates were set to help this industry or that. Equipment deteriorated; the government found better use for its money. Traffic fled to trucks. The rest is history. Railroad X today has a new set of managers—but it will take years to repair the damage.

. . . CAN IT?—Railroad X is no figment of an overworked editorial imagination. What I have described above is the Argentine State Railways. During a 20,000-mile fact-finding tour of Latin American railway, I found myself murmuring more than once in some airport departure lounge, "Thank God this could never happen at home"—and never more fervently than when I left Buenos Aires.

I still think it can't, and won't, happen here. But the situation I found when I returned to New York a couple of weeks ago made me wonder if we hadn't taken a small step in that dangerous direction.

WHO'S TRANQUILIZED?—What I found was an industry brought nearly to its knees by a decision of our own government to "use" the buying power of the railroads—and that of other businesses—in an effort to control inflation.

That decision, taken several months ago, suspended the 7% investment tax credit. It was certainly not the President's wish to hurt the railroads or any other business. It was simply that the obvious corrective—a general tax increase—was politically less attractive than imposing a "temporary" penalty on business. So the tax credit was suspended—despite earlier assurances that it would never be used to manipulate the nation's supply of money. In effect, the government offered a bonus to those who would **not** make big purchases this year.

We all hoped the effects would be minimal. But fast-snowballing events have proved otherwise. Buying of cars and locomotives has all but dried up. Equipment shortages loom. Suppliers who have spent years organizing skilled teams of engineers and technicians face the prospect of losing them. The peak-and-valley pattern of buying, so costly to everyone in the long run, is back, with a vengeance—by government decree.

Have railroad financial officers acted wisely in putting the freeze on purchases? That will be argued for years. But would you buy a house in September if the government told you it would be 14% cheaper in January? That's the way the arithmetic works out.

The tax credit suspension was designed to "tranquilize" an over-heated economy. We wondered editorially, at the time, if the Administration's tranquilizer wouldn't prove to be a sleeping pill. For once, we take no pleasure in saying "We told you so."

If the suspension isn't lifted, and lifted quickly, the railroads will carry the scars for years. And we can all look with new sympathy at Argentina.

LETTERS

Grade crossing problems

Trenton, N. J.

To the Editor:

Governor Richard J. Hughes has referred to me the issue of Railway Age emphasizing railroad-highway grade crossing problems.

This feature article [RA, Jan. 23, p. 14] was timely for New Jersey—a state with over 2,000 crossings of railroad tracks by public thoroughfares—as Governor Hughes' recently announced railroad passenger service capital improvement program included substantial funds for grade crossing eliminations.

This state is currently appropriating $2 million annually to eliminate grade crossings, to reconstruct structures no longer adequate and to install grade crossing protective devices. We agree, however, with the theme of the article that through both enforcement and education much can be done to decrease the grade crossing accident rate. Copies of the Railway Age article will be brought to the attention of the Attorney General, the Division of Motor Vehicles, and the Public Utility Commission.

David J. Goldberg
Commissioner of Transportation
State of New Jersey

Atlanta, Ga.

To the Editor:

We have read the article, "Where railroad meets the highway," published in the Jan. 23, 1967, Railway Age [p. 14], concerning the worsening problem of crashes involving trains and highway trailer rigs—especially tank trailers whose inflammable contents imperil human lives.

We are making Xerox copies of this article and forwarding them to the Directors of the State Highway Department and Department of Public Safety, requesting that they look into the matter and come up with whatever suggestions or views they might have to offer as to how this problem might be lessened.

Morgan R. Redwine, Jr.
Executive Secretary
Executive Department
State of Georgia

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VIEWPOINT

High-speed issue: Talk or Trains?

Men in the railway supply business worry a lot—with good cause. Among other matters, they worry about the role government expects them to play in the development of high-speed ground transportation in the Northeast Corridor.

Such high-speed passenger service is rapidly becoming an issue with a future. Politicians worry about the matter openly—and publicly.

Demographers, social scientists and city planners who have been whooping and hollering about the need for alternatives to crowded expressways and skies jammed with jets since World War II are being elbowed aside. Public office-holders recognize a durable issue when they see one. Even Administration satraps are pushing the issue. There is political mileage in promising people speed—on the ground.

We enjoy it all. Words used by Administration spokesmen are new, shiny and promising. Solutions to the problems of mass mobility in metropolitan and megalopolitan U.S.A. are often painted in Sunday supplement strokes. Helping add sizzle to the talk are alluring words about monorail, pressure-tube transport, rockets in tunnels, air-cushion vehicles, cars that glide on ice-film and so forth.

But talk isn't the same as deciding. So far, all the work being done seems to be centered around a device called a train running on something ordinarily called a track. Pullman-Standard is building a train designed by United Aircraft for service on the New Haven. There are Budd cars being built for high-speed service on the Pennsylvania in the Northeast Corridor. A test train loaded to capacity with wide-eyed railway suppliers streaked between Trenton and Brunswick, N.J., at 142 mph in a Commerce Department test a few weeks ago. In a few days some lucky carbuilder will get an order for 12 cars built to carry tourists in their cars from Washington, D.C., to Jacksonville, Fla. The PRR is plowing millions into its Washington-New York line to give it the billiard-table grades and sweeping curves needed to accommodate the swift trains that some think will usher in a golden new era of passenger service.

With this spread between talk and deed in mind, we were fascinated by the large roomful of railway suppliers that braved snow and sleet at Chicago to hear Dr. Robert A. Nelson a few days ago. As director of the Office of High-Speed Ground Transportation at the U.S. Department of Commerce, Dr. Nelson is a bona-fide Administration talker about high-speed ground transport.

Mentioning the work already done in the East, Dr. Nelson said that Commerce's efforts are focused on costs involved in right-of-way, propulsion and suspension systems. He warned the suppliers that research and development from the wheel down has not kept pace with equipment R&D. "The relationship between equipment and track is lopsided in favor of equipment," he noted. Supply executives all through the audience made notes.

Then, suddenly, the talk veered toward "the issue."

"The Department of Commerce is interested in *risky* R&D," he declared. The scribblers hesitated.

"Government is going to help support the cost of test facilities that promise to take giant steps!" Dr Nelson may have spotted a glassy eye or a hackle rising somewhere. He sought to reassure them: "Is government interest inimical to private industry? Progress always hurts somebody, but long-term gains outweigh short-term losses." Somebody moaned.

Then, Dr. Nelson's message: "The aerospace industry has mastered the technique of shifting from one technology to another—and making money at it. There are 950 mathematicians at Boeing. . . . The aerospace industry ties R&D provisions to government contracts. For example, they have used R&D funds from the Air Force to do high-speed ground research." A few suppliers turned green.

Dr. Nelson pointed out that government picks up the tab on aerospace obsolescence and opined that the cost of obsolescence in ground transportation could become so great that government may have to share such costs. As the suppliers pondered this, Dr. Wilson asked, "Why can't railway suppliers get R&D funds from the government for independent R&D? The tide of public opinion is swinging toward high-productivity systems." Note-taking was back to normal.

Dr. Nelson, having told the suppliers what he was going to tell them, decided to tell them what he had just told them: "Grab the opportunity. Find out how government funds for R&D can be secured to help meet the public interest."

The supply executives digested that for a moment before they applauded. They, like politicians, will worry about high-speed ground transportation for a long time to come. Unlike politicians, however, they will also be worried about those 950 mathematicians at Boeing.

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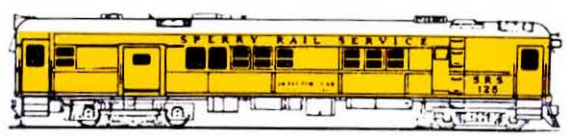

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